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ABSTRACT

Developed cooperatively by the National Education Association and the National Park Service, this guide may be useful in designing and conducting workshops to help teachers develop environmental education programs using resources to be found outside the school. Specifically, it considers workshop design variables, the design process, workshop content, and workshop outcomes. Design variables include general goals, human and natural resources available, site capabilities, and other factors. The design process gives systematic direction to the designers of the workshop, helping them shape general goals into specific objectives and to select activities based upon sound principles of learning and group interaction. Content encompasses the knowledge, skills, and attitudes the workshop seeks to develop, as well as the issues that come up during the workshop and the procedures involved in implementing the design with real-life people. Outcomes vary according to the design variables, process, and content. Crucial to the outcome are continuing dialogue and follow-up to ensure ongoing commitment to environmental education. Sample materials and forms, charts, and drawings supplement the information together with an appendix of activities and selected references. (BL)

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a guide to planning and conducting

environ-mental study area workshops

SE 014 477

ENVIRONMAN, representing man's interrelationship with the total environment, is a recognized National Park Service symbol associated with its environmental education programs.

A Guide to Planning and Conducting Environmental Study Area Workshops

developed cooperatively by
National Education Association

and

National Park Service
U.S. Department of the Interior

nea

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FOREWORD

Environmental education, by its very nature, is a cooperative venture involving all segments of human society. Areas in which a unity of effort promises great return are formal education and resource management.

Natural and cultural resources such as those constituting the National Park System afford the educator a new teaching opportunity—one where the processes of natural and social environment can be studied. Involvement of the surrounding school community in resource areas broadens the horizons of managers, teachers, and students.

As cooperation between educators and resource managers develops, other segments of society become interested and exciting opportunities for participation and service emerge. Joint ventures of the kind this guide seeks to facilitate carry a potential for enriching human awareness that is beyond our present abilities to predict.

The objective of the NESA program is to offer a method through which educators may act in concert with nearby resource managers to establish sound environmental education programs. The National Park Service, through its NEED (National Environmental Education Development) materials, offers one way the existing curriculum of any school can be used in this effort.

It is my hope that this guide, a cooperative project of park specialists and educators, will be used widely at a variety of sites to produce new programs, techniques, and philosophy. The measure of its effectiveness will be the development by students of their own personal synthesis of learning and living. The future of parks, of schools, perhaps even of man, rests on the outcome.

George B. Hartzog, Jr., Director,
National Park Service

ENVIRONMENTAL EDUCATION

The quality of man's environment continues to be a primary concern of the American public. Efforts are being directed toward pollution abatement through legislative and regulatory channels of government at all levels. This approach is necessary, but a successful solution to our environmental problems requires much more. What is needed is an aware and enlightened citizenry equipped with a basic understanding of environmental problems and the knowledge, skills, and motivation to solve them.

Recognizing education's important role in the area of environmental quality, the 1970 NEA Representative Assembly established a Task Force on Environmental Education to develop guidelines for appropriate curriculums to be used in developing environmental education programs.

The Task Force report, which was endorsed by the NEA Board of Directors and by the Association of Classroom Teachers Executive Committee, Advisory Council, and Representative Assembly, was adopted for implementation by the NEA Representative Assembly on June 30, 1971. In part, the report stated:

> It is imperative that man, wherever he lives, comprehend that his welfare is dependent upon understanding the effect of human decisions on the complex interrelationships that sustain natural processes. Man must be taught to manage these relationships properly. There is a vital need for an educational approach that effectively assists man in understanding his relationship to the total environment. This new approach, designed to teach citizens of all ages, is called 'environmental education.'

To be effective, environmental education must be related to the total curriculum and must be a responsibility of teachers in all disciplines. The interdisciplinary nature of environmental education makes it an ideal vehicle for meeting students' and teachers' demands that education focus upon issues that are vital and contemporary.

Teachers will need resources that extend beyond the classroom and are not common to most instructional programs. What follows is a guide to designing and conducting workshops to help teachers develop environmental education programs using the resources to be found outside the school.

It is hoped that this guide will assist teachers in meeting the challenge all citizens face—providing a quality environment.

Donald E. Morrison, president,
National Education Association

Jim A. Roady, president,
Association of Classroom Teachers

ACKNOWLEDGMENTS

This guide was developed by the Environmental Education Project with the assistance of the Association of Classroom Teachers, National Education Association; NTL Institute for Applied Behavioral Science, associated with the National Education Association; and National Park Service, U.S. Department of the Interior.

The following individuals participated in the development and conduct of the four experimental workshops and contributed their time and ideas to the preparation of the guide:

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Montgomery County Public Schools and Chesapeake and Ohio Canal National Historical Park (Maryland)

Del Norte County Unified School District, Humboldt County Schools, and Redwood National Park (California)

St. Louis Public Schools and Jefferson National Expansion Memorial National Historic Site (Missouri)

Maryville City Schools, Sevier County Schools, Knox County Schools, Tremont Environmental Education Center, and Great Smoky Mountains National Park (Tennessee)

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CHAPTER I

INTRODUCTION

During the 1971-72 academic year the National Education Association and the National Park Service of the U.S. Department of the Interior conducted a cooperative project. Its primary purpose was to develop this guide to designing and conducting workshops in environmental study areas—both those administered by the National Park Service and other similar sites throughout the country. To achieve this goal, the Environmental Education Project designed and conducted four experimental workshops, focusing on the rich resources of the National Park Service's National Environmental Study Areas (NESA's) and those of the surrounding communities.

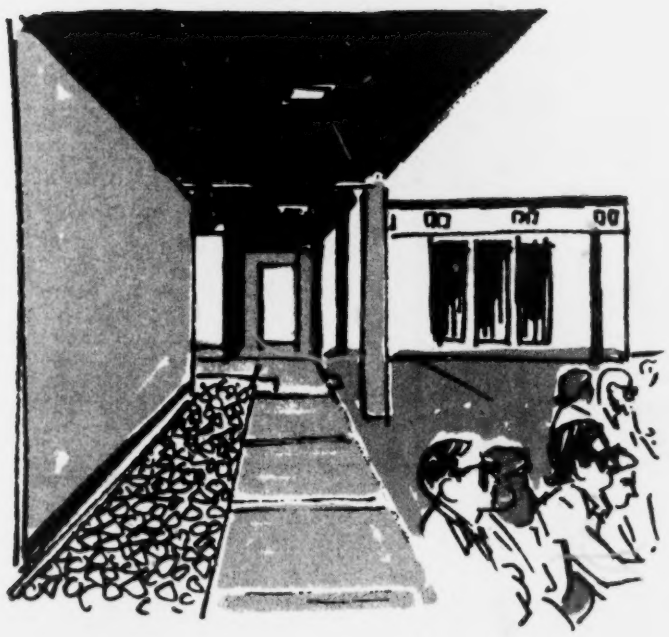
The workshops were held at Great Falls Park, George Washington Memorial Parkway, Potomac, Maryland; Redwood National Park, Crescent City, California; Jefferson National Expansion Memorial, St. Louis, Missouri; and Tremont Environmental Education Center, Great Smoky Mountains National Park, Tennessee. Both classroom teachers and personnel from the Park Service and other national, state, and local resource management agencies participated.

The NESA Program

The National Environmental Study Area (NESA) program is a cooperative venture of the U.S. Department of the Interior, the U.S. Department of Health, Education, and Welfare's Office of Education, the National Education Association, and local educational communities. Study guide materials developed by the National Park Service and the National Education Association are designed to be adapted to the regular curriculums of interested schools. The NESA program provides environmental learning experiences that make use of both the cultural and the natural worlds. It aims to help students relate to their world by (a) introducing them to their total environment—cultural and natural, past and present, (b) developing in them an understanding of man's use of his resources, and (c) equipping them to accept a responsible and active role in the world they are shaping and being shaped by.

NESA's vary. The primarily natural ones exemplify the elements, forces, and balances from which man is made and from which he builds his cities, society, and culture. In NESA's that are primarily cultural, the cultural significance generally springs from identifiable natural factors, such as a rise of ground that made a good battlefield or a landing site along a river that grew into a gateway to an interior region. In these sites students learn to recognize both the effect of the environment upon man's development and man's effect upon his environment. They become aware that the environment and the individual are actually an indivisible whole.

The NESA guidelines, outlined in the publication *Man and His Environment: An Introduction to Using Environmental Study Areas* (see Selected References), provide the framework within which each local area can develop a program to meet its needs.



The NESA program is interdisciplinary, man-centered, and based on the five environmental strands: variety and similarity, patterns, interaction and interdependence, continuity and change, and adaptation and evolution. These strands and the NESA sites that exemplify them are not a "subject" to be added to the teaching load. The strands are concepts with broad application—organizing elements that can reveal interrelationships throughout the environment. They can be applied in art, music, mathematics, history, social sciences, and communications. The more they are used, the richer a resource they become.

For further information about the NESA program, write to the NESA Coordinator, Office of Environmental Interpretation, National Park Service, Washington, D.C. 20240.

Purposes

The purpose of ***environmental education*** is to foster awareness of man's place in his environment. The purpose of an ***environmental study area workshop*** is to facilitate commitment to ongoing environmental education by having teachers, resource managers, and environmental specialists explore the environmental study area as a learning laboratory. The purpose of this ***guide*** is to assist in the design and execution of environmental study area workshops. It will specifically consider workshop design variables, the design process, workshop content, and workshop outcomes.

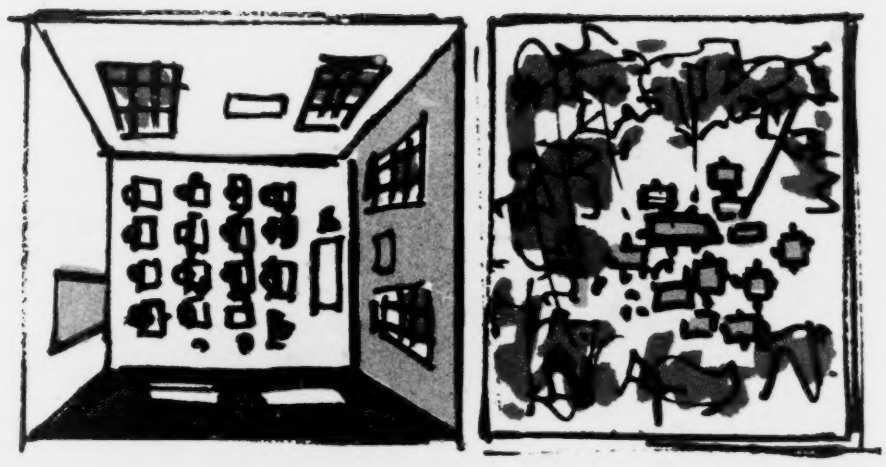
Workshop design ***variables*** include general goals, human and natural resources available, site capabilities, and other factors. The workshop design ***process*** gives systematic direction to the designers of the workshop, helping them to shape general goals into specific objectives and to select activities based upon sound principles of learning and group interaction. Workshop ***content*** encompasses the knowledge, skills, and attitudes the workshop seeks to develop, as well as the issues that come up during the workshop and the procedures involved in implementing the design with real-life people. Workshop ***outcomes*** vary according to the design variables, process, and content. Crucial to the outcome are continuing dialogue and follow-up to ensure ongoing commitment to environmental education.

This guide provides a design approach that may be used to plan a successful workshop. It represents a synthesis of ideas and suggestions obtained from the Environmental Education Project's four experimental workshops, which involved diverse participants in four vastly different settings. The key to success in these workshops was careful attention to the workshop rationale and the workshop design process, discussed in detail in this publication.

The steps that will be outlined are not inviolate. Adapt them where necessary. Use of the ideas, suggestions, and guidelines will depend upon your particular objectives, resources, and limiting factors such as time, funds, and facilities.

The information contained in this guide is not restricted for use with teachers of any particular grade level or subject matter, but rather is addressed to any educator or resource manager with the vision and the will to provide real-life, relevant learning experiences.

CHAPTER II



ASSUMPTIONS ABOUT LEARNING AS GUIDELINES FOR DESIGNING ESA WORKSHOPS

The growing wave of criticism of education from all sides has brought educators to a reassessment not only of *what* is taught and *how* it is taught, but also of *where* it is taught. An outstanding educator and author, John Holt, has said, "It is a very recent idea, and a crazy one, that the way to teach our young people about the world they live in is to take them out of it and shut them up in brick boxes."* More and more teachers, realizing the validity of Holt's statement, are extending the classroom to include any setting where learning can take place. But they need training if they are to make the best use of the extended classroom in environmental education. The environmental study area workshop can provide this training.

While the emphasis in the following chapters is on instruction beyond the regular classroom, ***an effective environmental education program must be fully integrated with what goes on in the regular classroom.***

The Assumptions

Regardless of where instruction occurs, the following assumptions about learning are generally subscribed to by educators as basic principles upon which sound instructional activities can be based:

1. The learner learns best when he is actively engaged in what is being taught; he learns by doing.
2. The learner learns best when he is using all his senses.
3. Each learner has unique ways of processing information and experience.
4. The learner learns something new in relation to something he already knows.
5. The learner learns what seems important to him—what he feels a need to learn.
6. Discovering for oneself generates a sense of excitement and satisfaction that reinforces learning.
7. Most formal learning occurs in groups, and all groups have dynamics or interacting forces that can either help or hinder learning.

The focus of these assumptions is on the individual learner's needs, senses, mental processes, and relationship to others in a group. They imply that learning can and does take place anywhere. Those who would facilitate learning should keep this clearly in mind.

These seven assumptions and their implications for instruction can serve as sound guidelines to designing activities for an environmental study area workshop. Each assumption merits expansion.

1. The learner learns best when he is actively engaged in what is being taught; he learns by doing. Since it is what the *learner does* that stimulates learning, activities involving participants in the fullest sense are a necessary element of every workshop. During the planning stage, it is helpful to place prospective workshop activities on a scale according to their learner involvement potential, ranking each somewhere between very low (simply sitting and listening) and very high (completely involved and personally responsible for learning).

As an example, take the activities in the One-Day

*Holt, John. *The Underachieving School.* New York: Pitman Publishing Corporation, 1969. p. 30.

Learner Involvement Rating Scale

Learner Involvement	Kinds of Activities	Amount of Time Planned for Activities (in fractions of an hour)
LOW		
•	One-way communication	_____
•	One-way communication and demonstration	_____
•	Directed discussion	_____
•	Demonstration repeated by learner	_____
•	Directed open-ended activity	_____
•	Completely open-ended activity	_____
HIGH		

Workshop Design (page 40) and place the amount of time allotted for each in the third column of the sample Rating Scale above. In the One-Day Workshop Design, one quarter of an hour is allotted for "Welcome and Orientation," an example of one-way communication and a very low learner involvement activity. The half-hour "Start-Up Activity" is an example of a directed open-ended activity with high learner involvement. "Introduction to Experiencing the Environment with the Senses" is a one-way communication activity, but the 1-1/2-hour "Sensory Exploration of the Environment" that follows is another directed open-ended activity. The "Discussion of the Morning Session" at 12:45 is directed discussion, which would fall in about the middle range of the scale.

Carrying this exercise through for the day reveals 3-1/2 hours scheduled for activities with high learner involvement, 1-3/4 hours for those with some or mild learner involvement, and only 3/4 of an hour with very low learner involvement. This would appear to be a workshop design with high learning potential. If this kind of analysis of a potential workshop design demonstrated that most of the activities planned fell at or near the low learner involvement end of the scale, attempts could be made to restructure the workshop.

2. The learner learns best when he is using all his senses. Potential workshop activities should be scrutinized to determine which senses will be involved in carrying them out. If the activities focus solely upon seeing or hearing, other elements should be introduced to involve additional senses. The sensory-rich environment beyond the classroom provides many opportunities for using all the senses.

3. Each learner has unique ways of processing information and experience. Since no two people learn in exactly the same way, workshop activities should be varied. It is best to schedule concurrent activities with a common objective. For example, some participants might chemically analyze water samples from a stream while others are making

basic observations about its rate of flow or the amount of sediment. A sequence of activities relating to the ecology of a stream might be planned and participants allowed to select those that are meaningful to them.

4. The learner learns something new in relation to something he already knows. Relating something new to what is already known gives the new information meaning. Therefore, workshop planners should provide a variety of activities within the workshop structure and make open-ended assignments so that individuals can respond according to their different levels of readiness. For example, in an urban workshop, participants might be directed to scrutinize a small section of the city in terms of function rather than appearance. Although the same assignment would be given to everyone, individual responses would reflect individual differences in experience, perceptions, and understanding of the assignment.

5. The learner learns what seems important to him—what he feels a need to learn. The crucial question in any learning activity is whether the learner perceives what is being taught as something he needs to know. In planning activities, workshop designers can find out what prospective participants want to know about a particular environmental study area by including a cross section of them on the steering committee or by circulating a questionnaire prior to the workshop. The questionnaire should be designed to determine needs, issues, and problems to be addressed by the workshop. It might ask, "What do you need to know to teach effectively in the natural environment?" or "What issues should an urban environmental study area workshop address?" Participants should be asked to respond in one-sentence statements. A compilation of the responses provides a basis for determining workshop objectives and developing activities.

6. Discovering for oneself generates a sense of excitement and satisfaction that reinforces learning. The thrill-of-discovery concept cautions against providing everything for participants. Activities should be designed to allow participants to discover answers for themselves. Instead of stating, "Rabbits, squirrels, chipmunks, mice, 12 species of birds, and over 100 species of insects have been identified in this area," ask, "What evidence can you find that animals live in this area?" Rather than telling participants, "This county is a good example of suburban sprawl," ask them to "Devise a way to estimate the number of new homes built in this county in the past year and draw conclusions from your data."

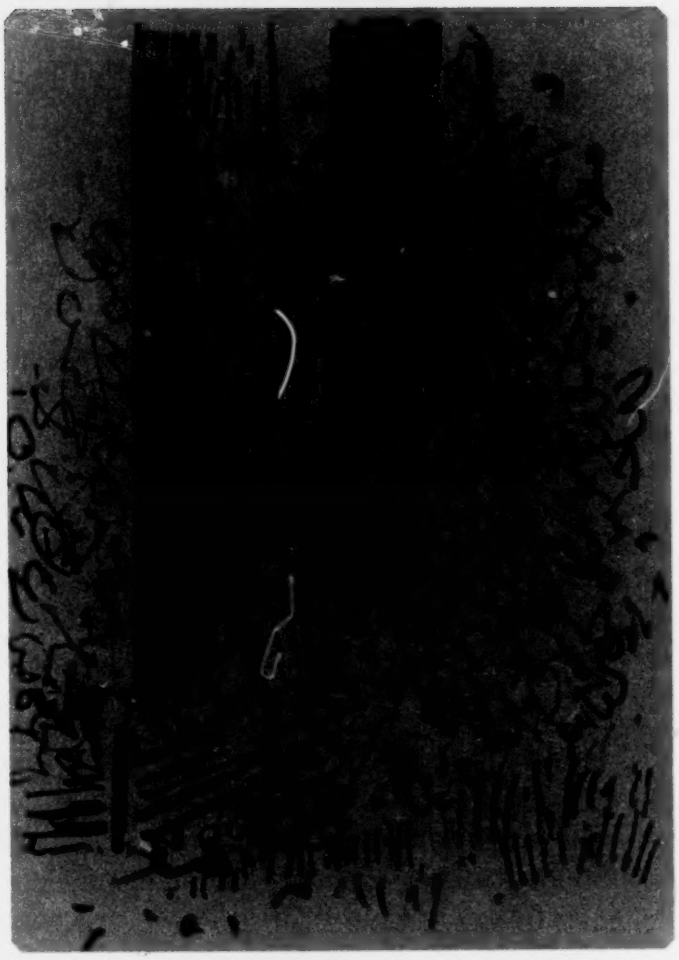
7. Most formal learning occurs in groups, and all groups have dynamics or interacting forces that can either help or hinder learning. To facilitate maximum learning, take care to reinforce the dynamics of a group. It should not be assumed that combining a group of like-minded people will automatically result in free and easy interactions whereby they share their resources and learn from each other. It is often necessary to work directly with the processes of a group. Anxiety and fear may be dissipated by start-up activities that allow participants to mingle, to share something of themselves, and to express their interests and expectations about the workshop. A climate of trust and togetherness is necessary if maximum learning is to occur. Examples of approaches to developing such a climate are included in Appendix A.

The Guidelines

The following guidelines for designing workshop activities have been derived from the seven assumptions about how people learn:

1. Actively involve participants.
2. Design activities that require use of all the senses.
3. Vary activities and provide options.
4. Consider participants' different levels of readiness for activities.
5. Determine what prospective participants want to gain from the workshop. Involve them in planning for it.
6. Design activities through which participants discover for themselves.
7. Plan activities to help participants get acquainted and feel at ease.

CHAPTER III



PRE-WORKSHOP ACTIVITIES

An environmental study area workshop may be initiated by an administrator, teacher, or group of teachers within a school system; by a person or group within a resource management agency wishing to initiate an environmental study area program; or jointly by a school system and a resource management agency.

If the school system initiates the workshop, it should contact the person in charge of the site where it expects the workshop to take place. A written communication should explain the general purpose and rationale for the workshop. If a representative of the study area initiates the workshop, he should make formal contact with the office of the superintendent of the school system and with the local teachers association. If the workshop will be a joint effort of both the study area and the schools, a liaison person may be selected who keeps both agencies informed.

Organizing the Steering Committee

The design and staging of an environmental study area workshop should not overtax the time and energy of one individual. It is a substantial undertaking requiring organization, careful coordination, and efficient delegation of responsibilities. Therefore, it is advisable to establish a steering committee to plan and coordinate the workshop. The workshop's general goal or goals should be already in mind when this committee is organized.

If the workshop is being initiated from within the school system, a resource management person with some responsibility for the environmental study area should be asked to serve on the steering committee. If the workshop is initiated by a resource management person, the school superintendent can be asked to name a member of his administrative or supervisory staff to serve on the steering committee, and the teachers association president can be asked to designate a classroom teacher. Ideally, there should be both administrative and classroom teacher representation. A cross section of prospective workshop participants should serve on the steering committee to aid in the formulation of objectives based on their felt needs for learning.

It is important to keep the steering committee small enough to function effectively (four to eight people). Convening the committee is the responsibility of the chairman. If the initial invitation to serve on the steering committee is verbal, it should be followed up with a written confirmation detailing the time, place, and purpose of the first meeting. For example, if a resource management person convenes the meeting, the general purpose might be to plan a workshop to help teachers use the environmental study area(s) he oversees for educational activities.

Functions of the Steering Committee

When consensus on the general purpose has been reached, the actual planning of the workshop should begin. Major elements in planning include—

1. Developing the workshop design.
2. Selecting participants.
3. Selecting a site.
4. Working out physical arrangements.
5. Designing follow-up action.

Developing the Workshop Design

Developing the actual design of the workshop is the most important planning task. A sequence of activities is required, beginning with the determination of specific goals and objectives and culminating in a complete, detailed blueprint of the workshop. This sequence will be discussed in detail in Chapter IV.

Selecting Workshop Participants

Self-selection by means of an open-ended invitation circulated throughout the school system is recommended. This approach is predicated on the assumption that voluntary participants will share a sincere interest in and commitment to environmental education. If too few people respond, additional participants can be selected from among recommendations by the teachers association, the superintendent's office, or administrators within the school system.

While physical and natural science teachers are frequently identified with environmental education and will in all likelihood be represented at the workshop, other disciplines have an equal contribution to make. It is highly desirable that teachers of the language arts, creative arts, and social sciences be represented.

Most workshops will probably be oriented toward teachers. However, the workshop experience can be enhanced by the participation of administrative staff (their numbers being dependent upon workshop objectives) and of persons familiar with natural and man-made features of the study area. Resource managers, rangers, interpretive naturalists, and environmental specialists can generate a new awareness of the area's educational potential. Others to be considered either as potential participants or as resources for specialized workshop activities include teachers experienced in using the area, local college or university faculty, park planners, landscape architects, and related professionals, especially if their involvement leads to integration of the workshop efforts into other activities of the school system or study area. Recommendations of names should be sought from the environmental study area staff, the National Park Service regional and main offices, and the municipal or state recreation and park systems. City and state environmental education consultants can also be contacted.

The initial selection of participants should be based upon the workshop objectives and design variables, while the final selection should be based on the individuals' interest in environmental education, desire to learn, availability to participate in a group experience, and commitment to adapting and using the workshop experience in future endeavors. To ensure regular, long-term use of the environmental study area, it is best to draw workshop participants from nearby.

Common understandings, interests, and expectations among participants are important. However, diversity of race, ethnic background, profession, age, sex, and perspective broadens and enriches the workshop experience. The greater the variety of participants, the greater the opportunity to explore creative approaches to investigating and using environmental study areas.

While the initial contact with participants can be made by telephone, it is essential to confirm their participation in writing. A questionnaire such as the one on page13can be mailed to all participants to elicit information that will guide the structuring of workshop activities. Final details should be transmitted to participants no later than one week prior to the workshop. Reading materials should be included in this mailing if participants are expected to be familiar with them during the workshop.

The number of participants in a given workshop will vary with local resources and objectives. The importance of individual involvement should be kept in mind when deciding upon the number of participants. Where desirable, arrangements should be made for activities to be carried out in small groups or teams.

Selecting the Workshop Site

The primary consideration in selecting a site for the environmental study area workshop is its educational potential. A diversified area increases the number and variety of activities that can be undertaken, but something can be learned from any site, be it virgin forest or city dump. The final selection will be determined by the site's appropriateness for large group instruction.

Logistical questions must also be considered in selecting a workshop site:

Is the area easily accessible?
Are there places to park?
Are lavatory facilities available?
Is there a sheltered area in case of inclement weather?
Is there a place to sit down to eat?
Is water available?
Is electricity available, if needed?
If it will be an overnight workshop, are accommodations available close by?

Sample Questionnaire

Name _____

Address _____

City _____ State _____ Zip _____

Telephone _____

_____ Yes, I will be able to participate.

_____ No, I will be unable to participate.

If you answered YES above, please complete as much of the following information as seems pertinent to you.

Nickname or name you prefer being called by _____

Title _____

Major responsibilities _____

_____

Number of years of experience in your field _____

College major _____ Minor _____

Graduate field of study _____

Do you play the guitar? _____ If you play another instrument, please specify:

_____

Background, experience, or interest in environmental education or related areas: _____

_____

Such questions must be considered in the context not only of the workshop itself, but also of the subsequent use that will be made of the area.

Three basic criteria used by the National Park Service to identify potential environmental study areas make good questions to consider when choosing a workshop site:

1. Are there features that lend themselves to interpreting man's relationship to his environment?
2. Does the site have an overall "sturdiness" sufficient to offer a wide range of educational opportunities without impairment of the essential integrity of the environment?
3. Do its location and facilities make it convenient for regular use by area schools as part of curriculum-related educational programs?

Making Workshop Arrangements

Housing. Arrangements for housing, as for meals and transportation, will vary according to the logistics and length of the individual workshop. One-day workshops will not require overnight accommodations, unless start-up activities are planned for

the evening preceding the workshop day. If housing is required, it should be as close to the study area as possible to cut travel time and to facilitate the general flow of activities. For many reasons, on-site housing is preferable. A resident facility allows the group to establish greater unity and offers many possibilities for workshop design.

Most participants can be placed two in a room or in dormitory-style accommodations unless there is a reasonable objection. Room assignments can be made at random, to honor individual preferences, to facilitate communication among participants of different backgrounds, or to effect a racial mix.

Meals. It is advisable to house participants in a facility that also provides meals. Menus should generally be selected in advance to conserve time and money. A variety of foods may be included during the workshop, but for the most part everyone should be served the same menu. Breakfasts can be taken at participants' leisure, but the post-breakfast assembly time should be firm. Luncheons and dinners should be group events. Depending upon logistics, all meals can be scheduled at a conventional eating establishment, or lunches can be served at the study area.

A simple lunch will suffice for a one-day workshop and can be provided by the individual participants. If the steering committee assumes the meal responsibility, the menu should be chosen in advance. If the meal is served at a hotel, resident facility, or commercial eating establishment, the group should arrive on time to avoid difficulties. Commercial restaurants often require a guaranteed serving number 24 hours in advance. Determine this number as accurately as possible, remembering that many restaurants prepare for an additional 5 percent in unexpected guests. If a box lunch or smorgasbord is provided in the study area, refrigeration may be an important consideration.

Transportation. Initial transportation to the study area or housing facility may be by carpool or individual vehicles. During the workshop, the group can be transported from site to site in carpools or buses. It is usually advisable to travel in teams or standard groups to avoid confusion. Travel time should be allotted in the workshop schedule and may be used to conduct certain activities or observations.

Resource persons. Resource persons can contribute significantly to the quality of the workshop. They can be selected to introduce and assist with activities, to answer questions, to provide periodic input, or to add specific content material about the area at which the workshop is conducted. Sometimes the availability of a specialist or expert may justify the inclusion of an activity through which he can share his experiences and knowledge. If a person with the appropriate skills and background for a particular activity cannot be located, the activity should be avoided.

Resource persons can be drawn from the study area itself, from the school system, from local colleges or universities, or from any number of organizations in the vicinity. Usually such persons will donate their services. Should it be necessary to offer a small honorarium or consultation fee, the details and amount should be clarified before the commitment is made. If possible, resource persons should be invited to meet the group informally prior to their scheduled presentation.

If the workshop lasts more than one day, entertainment or group activities such as dancing, singing, or games may also be offered. Individuals within the group with particular skills may be asked to

lead such activities.

Miscellaneous. A variety of *printed material* may be used during an environmental study area workshop. Many organizations will provide bibliographies and other materials in quantity without charge or at a significant discount. Use the bibliographies to identify the materials most relevant to the workshop and contact the publishers or distributors. If a series of workshops is planned and if storage space is available, sufficient material for many workshops should be ordered at one time.

It is important to order films, filmstrips, and other *audiovisual materials* in advance, since many items are in heavy demand. Equipment should also be reserved well in advance and arrangements made to have it delivered to the workshop site if necessary. All audiovisual aids should be screened before the workshop.

The need for *publicity* may or may not be significant. The extent of media coverage will be one of the decisions of the steering committee. A news item in the local paper and/or the school or resource area bulletin should be considered in terms of its potential to gain untapped support for the environmental education program. Pre- and post-workshop coverage and later follow-up information will inform the community and the professionals of the progress in environmental education. In fact, periodic items in many communications media may be a valuable public relations activity for the school system or resource area. A sample press release appears below.

The workshop *schedule* and *information sheet* outlining important details should be mailed to participants in advance. A suggested schedule format appears on page22. Extra copies should be included in the packets of materials distributed at the workshop. The information sheet should inform participants about transportation (if appropriate), housing and meals (if necessary), special attire or materials to be brought, and the name(s) and telephone number(s) of the contact person(s). Other information should be included as required. A sample information sheet appears on page 16.

Planning Follow-Up Action

Suggestions for designing workshop follow-up activities will be given in Chapter VI.

Sample Press Release

PSEUDOVILLE LAUNCHES
ENVIRONMENTAL EDUCATION EFFORT

Pseudoville. As a complement to the environmental education curriculum being developed by a committee of teachers for Pseudoville's intermediate grades, an outdoor study program is being launched with an environmental studies workshop to be held at Sugarloaf Park, May 15. The primary goal of the workshop is to familiarize participants with the resources of the National Environmental Study Area at the park through a variety of activities at the site.

Cooperating in the workshop are the Pseudoville School District, the local teachers association, and the National Park Service. Eighteen teachers will be actively involved in the one-day environmental learning experience.

The "strands concept" will be used as an approach to observing and understanding the environment. Conceived for use by teachers and resource persons whether or not they have a background in science, the five strands are interaction and interdependence, variety and similarity, patterns, continuity and change, and evolution and adaptation.

Resource persons assisting in the day's activities will represent the local university's Department of Environmental Studies, the State Conservation Department, and the R.L. Frank Construction Company. These groups have offered continuing assistance to the environmental education effort in the community and have been active in related activities in the state.

Additional information is available through the superintendent's office, Pseudoville School District.

Sample Information Sheet

MEMORANDUM: April 3
TO: Workshop Participants
FROM: Steering Committee
SUBJECT: Sugarloaf Park Environmental Study Area Workshop

We are happy that you have accepted the invitation to participate in the Sugarloaf Park Environmental Study Area Workshop. The following information should be useful to you in planning for the workshop. Should you have further questions or require assistance, please contact Jane Cleveland or Carlos Cervantes at 382-5677.

DATE	The workshop will begin at 9 a.m. and adjourn by 4 p.m. on May 15. Participants should arrive at the Tamarack Elementary School parking lot by 8 a.m.
PLACE	Sugarloaf Park.
REGISTRATION	Registration will occur at the Park.
MEALS	Box lunches will be served at the site. Coffee and refreshments will be provided in the morning and afternoon.
EXPENSES	Expenses will be borne by the Pseudoville School District.
ATTIRE	Comfortable clothes appropriate for mild weather and footgear suitable for hiking and general outdoor activities are suggested. Bring raingear if rain appears likely.
TRANSPORTATION	Transportation from the school parking lot to the workshop site and back will be by carpool. You will be assigned to a carpool on the morning of the workshop.
ADDITIONAL INFORMATION	You may wish to review the environmental education materials enclosed. You will find the workshop experience has more carry-over value if you are familiar with these materials.

CHAPTER IV

THE WORKSHOP DESIGN PROCESS

In order to design a complete, logical, innovative, and exciting sequence of activities, the workshop steering committee should follow a systematic planning process consisting of the following tasks:

1. Determining goals and deriving specific objectives
2. Brainstorming for activities that support learning and are in line with the specific objectives
3. Determining limiting factors
4. Selecting the most appropriate activities
5. Sequencing the activities
6. Determining support systems needed to conduct the workshop (materials and people)
7. Developing a workshop schedule.

Step 1: Defining Goals and Objectives

The most important step in the design process is to identify, as precisely as possible, the goals, specific objectives, and desired outcomes of the workshop. A surprising number of workshops are held for vague reasons, with equally vague notions as to desired results. The experimental nature of workshops leads some designers to reason that each participant will find his own meaning in the experience. While he will to some extent, to carry such reasoning to its ultimate conclusion would mean that merely providing an opportunity for people to "do their own thing" would be sufficient rationale for a workshop. Obviously, this is not the case.

Without specific objectives in mind, it is very difficult to plan meaningful activities. The specific objectives should flow from the overall goal(s) set forth by the initiators of the workshop. The objectives are the *knowledge*, *skills*, and *attitudes* that participants are expected to carry away as a result of the workshop experience. *Knowledge* implies awareness and an ability to relate new facts to those already known. It means knowing something—the number of white pine needles in a bundle or the population of the state capital. *Skills* involve the demonstrable use of knowledge; acquiring them is more complicated than acquiring information. Skills could include using a beating net to catch insects or an inquiry technique to discover answers. *Attitudes* involve feelings or emotions and are the most difficult to develop, because they are generated by many forces often beyond the workshop designers' control. It is important to realize that attitudes are affected not only by the workshop content (*what* is being done), but also by the workshop process (*how* it is being done) and by how people feel about what they are experiencing. Attitudes are formed by the *way* people are taught (process) more than by *what* they are taught (content).

To illustrate, suppose the overall goal of a workshop being designed is "to acquaint people with the Pine Grove Environmental Study Area and its resources." It is difficult to design workshop activities for such a general aim. It is much easier and more helpful to determine specific outcomes desired from the workshop experience, by asking,

1. What *information* about the area should the participants know?
2. What *skills* do they need to best use the area?
3. What *attitudes* should they have about the environmental study area, its resources, availability, etc.?

Answers to these questions provide the specific objectives upon which to build a workshop design.

Step 2: Brainstorming

The second step in the planning process is to brainstorm for activities that will facilitate the successful achievement of each specific objective. Given the objective, members of the steering committee are challenged to think of as many activities as possible, whether or not they might work. As fast as suggestions are voiced, a recorder writes them on a blackboard or large piece of paper (i.e., newsprint) so that all can see them. Only after the group has exhausted its ideas for each objective does it decide which ones are most realistic; these it works on in greater detail. The rationale behind brainstorming is that generation of ideas stimulates other ideas. By suspending critical judgment of whether each idea is good, practical, or realistic, groups are

able to generate ideas that would not come up in a more typical planning process.

STEPS IN BRAINSTORMING

1. Think of all possible ideas for activities.
2. Record all ideas on blackboard or newsprint.
3. Evaluate the ideas.
4. Expand and refine the best ones.

Brainstorming facilitates the designing of fresh and exciting workshops. For individuals with previous experience in conducting workshops, it helps combat the tendency to drift into a pattern and use the same activities over and over.

Step 3: Determining Limiting Factors

The workshop design must be constructed within the framework of existing limitations, such as time, resources, and finances. In order to maximize the very creative potential of the brainstorming step, it is important to identify the limiting factors and to deal with them to the best of one's ability—creatively but realistically.

Finances

The major limiting factor is probably finances. If the workshop designers see money as an overwhelming limitation, they can easily fall into the trap of limiting expectations. Two- or three-day workshop designs have a greater impact and make more significant contributions than do one-day workshops, but they inevitably cost more money to conduct. If a three-day workshop is needed to achieve the objectives set forth, but housing cannot be funded with available resources, it may be possible to develop three one-day experiences to accomplish the same objectives. The point is not to allow limitations to dictate a workshop design that will not fill the needs or achieve the objectives identified. If additional funds are needed, be aggressive in trying to find alternate ways of funding the workshop. Given a good idea and an exciting purpose, local chapters of such groups as the Izaak Walton League or the Audubon Society might be willing to help the workshop—if not with money, perhaps with other types of resources.

Technical and Human Resources

Availability of technical and human resources substantially affects the workshop design. For ex-

ample, a site may be excellent for geological studies, but if a professional geologist or an individual knowledgeable about rocks and minerals is not available to direct the study, it will not be meaningful. It is important to identify the resources available early in the planning stage. In addition, workshop planners must assess the methods the resource persons will use to carry out their assigned responsibilities. If the goal is for workshop participants to learn by experience, the requirement for experts to teach by imparting information will not be high.

Time

Workshop participants will have many demands upon their time. In some school systems released time to participate in a workshop requiring more than one day will be difficult to obtain. Other commitments may also prevent participation in an extended workshop. One possible solution which has already been suggested is to schedule three one-day workshops over a period of time rather than one workshop in three consecutive days; another is to schedule a three-day workshop to dovetail with a weekend.

Judicious use of time for the programed portion of the workshop is essential. Whether the workshop is one, two, or three days long, remember that time must be reserved for travel, meals, personal needs, and, in longer workshops, rest and relaxation. Six structured hours for a one-day workshop is usually the maximum available. Obviously, only activities capable of accomplishment should be scheduled.

Step 4: Selecting Workshop Activities

Taking into account the limiting factors that exist, the steering committee must determine which activities developed in Step 2 best meet the specific objectives of the workshop.

The start-up activity should help participants get acquainted and learn about each other's varying backgrounds and interests. If participants are already acquainted, the start-up period may be used for group discussion of the planned workshop activities and personal expectations. In a two- or three-day workshop, allot two to three hours for the start-up period. In a one-day workshop, limit the start-up to 30 minutes.

Certain workshop activities are appropriate for large group participation, depending on objectives, resources available, etc. However, greater individual involvement usually occurs when small groups or teams engage in the same activity or similar ones simultaneously. Team-building can be one aim of the start-up activities. Team-building exercises, which help participants become better acquainted, are especially important if groups expect to continue a working relationship following the workshop.

The activity selection phase of the planning sequence should examine the degree to which all objectives of the workshop will be met by the activities and where the emphasis must be placed. Determine the amount of time to be allotted for each activity, making sure that the outcome of each justifies the time spent. Obviously, if a five-hour activity is planned to accomplish one objective and a one-hour activity to accomplish another objective, the first objective is being given a much higher priority.

It is also important at this stage to think of alternative activities for various points in the workshop—especially in longer workshops, where several optional activities might be conducted simultaneously, to be pursued by participants according to their interests. Optional activities allow participants to explore selected areas in depth without everyone having to be involved at the same level. The planning of optional activities requires more detail work and greater resources, but the extra effort to respond to individual differences and interests brings added rewards for participants.

A survey form like the one on page 20 can help steering committee members select opportunities for individual participation according to interest. After brainstorming, they may investigate numerous sites within the environmental study area, complete the form for each, and then discuss their findings

Optional Activities Survey Form

Name of site and location: _____

Approximate distance from overnight accommodations (if appropriate): _____

Significant features of the site: _____

Name, address, and title of contact person at site: _____

Limitations on use: _____

Cost (if any): _____

Comments and recommendations: _____

Activity Preference Sheet

Times will be allotted during the workshop for optional study activities and presentations relating to the environmental study area. You will have an opportunity to participate in two of these. Please rank the following from 1 to 5 (most preferred to least preferred).

____ Plants and animals of the area
____ Geology of the area
____ Inquiry activities along the river
____ Soil and water testing
____ Investigation of man's influence in the area

before making a final selection of the most appropriate optional activities. In addition, an activity preference sheet such as the one shown above can be mailed to all prospective participants early in the planning stage so that the optional activities can be tailored to their interests.

Step 5: Sequencing Activities

Sequencing activities is an important part of the workshop design process. There should be a logical reason for the sequence chosen. Generally, the best sequence is one in which each planned activ-

ity builds smoothly on what has been learned in the previous one. In planning the sequence, assume the role of a participant and mentally proceed through the planned activities one by one, checking your reactions and revising the sequence of activities when they don't seem to flow smoothly.

Step 6: Providing Support Systems

When all workshop activities have been sequenced, determine the support systems needed to conduct them, e.g., resource personnel, instructional materials, audiovisual equipment, food, lodging, transportation, etc. Brief staff and resource personnel responsible for conducting particular activities and specific assignments, and orient them to the total workshop design. The mechanics of acquiring, checking, and testing all necessary equipment and material may appear routine, but these are critical tasks which should be delegated to responsible people.

Step 7: Developing a Workshop Schedule

The final step in the design process is to develop the workshop schedule. The schedule should outline for each planned activity—

1. What is going to happen.
2. When it is going to happen.
3. Where it is going to happen.
4. Who is responsible for the activity.

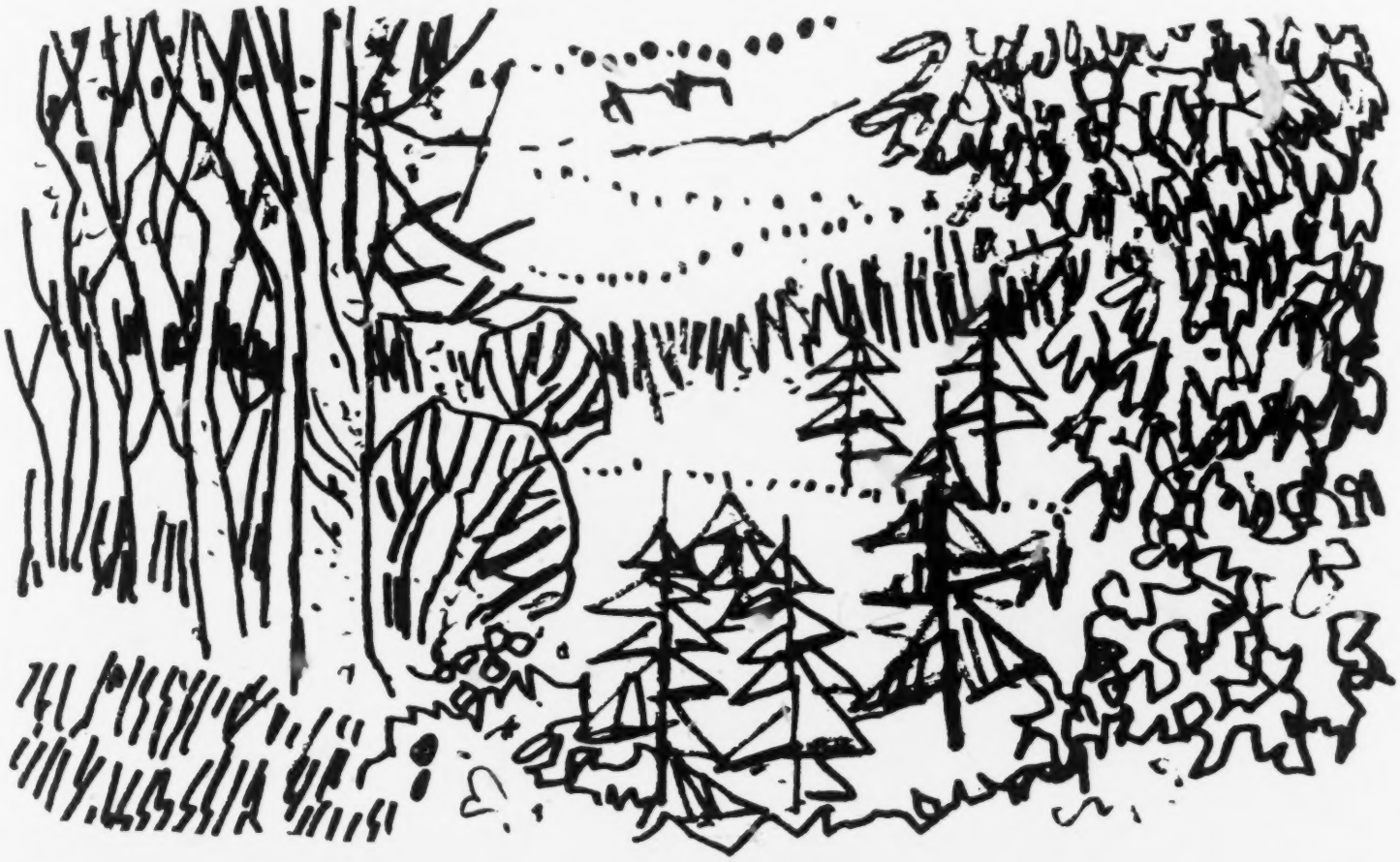
Remain flexible so that the schedule may be modified or expanded. Provide each participant with a schedule, and announce and explain any necessary changes promptly. The schedule will not only serve as a staff worksheet during the workshop, but will also provide a focus for reviewing and evaluating the workshop upon completion and for improving the effectiveness of future workshops. A sample schedule appears on page 22.

Summary

The workshop design process—determining goals, objectives, and limiting factors, selecting and sequencing activities, providing support systems, and developing a schedule—culminates in a complete, detailed blueprint of the workshop. A thoughtfully constructed design will ensure a more successful workshop.

Sample Workshop Schedule

Time	Place	Activity	Leader
8:00 a.m.	Tamarack School parking lot	Assemble	
8:15-9:00	In transit	Travel to workshop site	
9:00-9:15	Park headquarters	Registration and distribution of materials	Saundra Goldstein
9:15-9:30	Park shelter	Welcome/Introductions/Review of objectives	Jane Cleveland
9:30-10:00	Park shelter	Start-up activities/Team formation	Joe Lamb
10:00-10:15	Park shelter	Coffee break (in teams)	
10:15-12:15	Study area	Introduction to the strands	Carlos Cervantes
12:15-1:00 p.m.	Park shelter	Lunch	
1:00-1:30	Park shelter	Review of morning's activities/Explanation of afternoon's activities	Carlos Cervantes
1:30-2:15	Study sites	Application of strands	
2:15-2:45	Park shelter	Team preparation of reports	
2:45-3:15	Park shelter	Team reports	Carlos Cervantes
3:15-3:45	Park shelter	Open discussion	Carlos Cervantes
3:45-4:00	Park shelter	Workshop evaluation	Jane Cleveland
4:00	Park shelter	Adjournment/Return to Tamarack School	Jane Cleveland



CONDUCTING THE WORKSHOP

Undue preoccupation with procedures and routine tasks during the workshop will minimize participants' involvement and may interfere with their learning experience. Adequate advance planning and on-site coordination will reduce the risk of problems arising to interrupt the smooth flow of activities.

Registration

A friendly welcome and organized check-in procedure set the tone and atmosphere for the workshop. The registration table should be located near the entrance to the facility or meeting site. If possible, the table should be visible from the entrance. If not, put up a sign or signs in an area through which all must pass, indicating where to register. The registrar should provide each participant with the following items:

1. Name tag
2. Roster of participants
3. Packet of information and instructional materials
4. Receipt for fees collected (if necessary)
5. Other items as required.

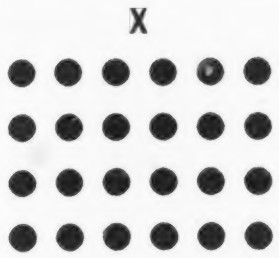
Registrants should be clearly informed of where and when the workshop activities will begin and should be given any other information that will affect them during the workshop. At overnight workshops, they should be given room assignments and directed to a room registration desk at the hotel or center. Room assignments should be worked out with the facility management in advance.

Set up the registration table 30 minutes before the announced time to accommodate early arrivals. However, the registrar should not register anyone until he is ready to proceed in an orderly, precise manner. Keep the registration table in operation until the announced terminal time, and make arrangements to accommodate an occasional late arrival without preventing the involvement of any workshop staff in the welcome and orientation activities.

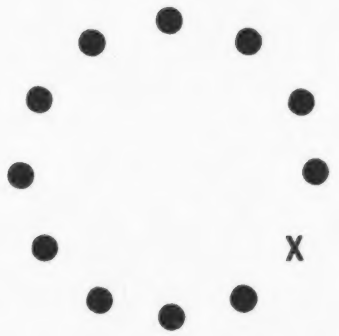
Sleeping Rooms

Rooms for overnight workshops can be assigned in a variety of ways. Twin-bedded rooms not only effect an appreciable saving, but also facilitate participants' becoming acquainted with each other. If participants have stated preferences for roommates, such wishes should be honored when feasible.

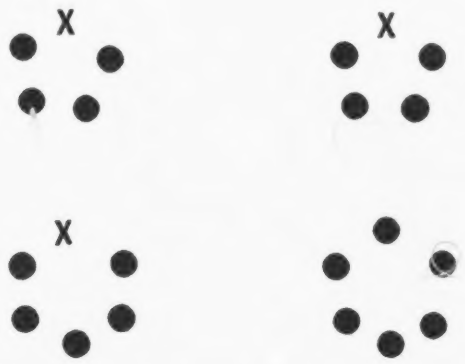
Seating Arrangements



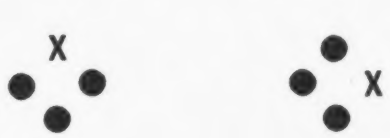
Large Group (6 or more persons): Impersonal
Facilitates information dissemination (lectures, films, demonstrations) by a single authority with little group participation.



Large Group (6 or more persons): Personal
Facilitates information sharing (evaluation, discussion, problem solving) with low-key leadership and substantial group participation and interaction.



Small Group (3-6 persons): Personal
Facilitates specific work tasks and problem-solving activities with or without a group leader.



Small Group (3-4 persons): Highly Personal
Facilitates team-building and getting acquainted exercises with or without a group leader.

Dyads (2 persons): Highly Personal
Facilitates the most intimate communication between participants. Best arrangement for developing rapport between two people.

● participant
X leader

Some participants may specifically request a private room. If this request has budgetary implications, make perfectly clear the amount that will be underwritten and the individual's personal responsibility for the balance. The rationale behind room assignments should be clearly explained to participants well in advance to minimize confusion and misunderstanding at registration time.

Meeting Rooms

Coordination between workshop and facility staff is important to ensure that the required meeting rooms or activity areas are available and set up properly. Materials should be available, seating arrangements as specified, and electrical equipment operational. An entire activity can be disrupted should one of its basic elements fail to function or be unavailable. One person should be assigned the job of checking ahead of time that each activity and room set-up is in order. The size of the meeting room must in all cases be appropriate to the size of the group using it.

Seating Arrangements

Seating arrangements affect learning, group climate, and the interaction of participants. Suggested arrangements and their implications are illustrated on the opposite page.

On-the-Spot Support

If typewriters, duplicating machines, or other equipment will be needed, advance planning is essential, since it cannot be assumed that the site will readily meet all physical needs. Magic markers, writing paper, chalk, masking tape, blank name tags, and first-aid supplies should be available.

Start-Up Activities

The intent of start-up activities is to help the workshop gain momentum quickly. Generally, the more personally involving these activities are for participants, the greater the possibility of stimulating positive actions within the group. In contrast, a lengthy introduction of staff, other personnel, and visiting dignitaries, or a detailed discourse to open the workshop, runs the danger of alienating participants and inhibiting their meaningful involvement in subsequent activities.

The general theme of all start-up activities is exploration. Participants should be given opportunities to explore (a) interpersonal relationships, (b)

workshop objectives, and (c) workshop resources. Any activities that help to speed up explorations in these areas are start-up activities. Some examples can be found in Appendix A.

Instructional Activities

The most important consideration in all workshop activities is whether they stimulate and sustain participant involvement. It is what the participants do, not what the instructor does, that results in learning. The instructor should view himself as a facilitator of learning rather than as an imparter of knowledge. His manner should reflect sincerity and friendliness, and he should communicate a genuine interest in learning himself. An acute observer of teaching and learning has noted, "When a student perceives a teacher to be an authentic, warm, and curious person, the student learns."* There is no reason to believe that this is any less true in an environmental study area workshop, where the "student" may be a teacher, and the "teacher" a resource management person.

The most careful consideration should be given to how the workshop's instructional activities are carried out. The seven assumptions about learning which were developed into useful guidelines for *planning* activities (see page 10) are equally important in *conducting* activities. The following instructional activity was designed with the seven guidelines in mind. The method of application will be elaborated upon on page 27.

*Postman, Neil. *Sensorsheet*. Boulder, Colo: The Environmental Studies Project and the Earth Science Teacher Preparation Project, January 1972.

C&O Canal Inquiry Sheet

When the C&O Canal was in use, barges were towed up and down the canal by mules walking along the towpath. Long ropes ran from the barges to the mules. Instead of having someone tell you more about the canal, your job is to find out about it by yourself, or by working with others. Take some time to look over the canal and the locks. Try to picture in your mind how a lock worked, and draw it (on the other side of this sheet) as you respond to these questions, or when you finish. If, after exploring the area, you need more information or have any questions, the instructor is available to help you.

1. Where were the gates of the lock? _____

(Mark them on your drawing.)

2. Show on your drawing which way the gates pivoted. How do you know? _____

_____

3. At the trench parallel to the lock, listen carefully. What do you hear? _____

What do you think was the purpose of the trench? _____

_____

Show it on your drawing.

4. Can you find some of the hardware from the gates or some sign of where it was? _____ Show it on your drawing.

5. Can you find the straight grooves worn into the stones on the downstream end towpath side of the lock. _____ How deep are they? _____ How do they feel? _____ What do you think might have worn the grooves into the stone? _____ Show them on your drawing.

6. Sometimes the men who cut stones for the locks signed their work with a mark, which was somewhat like a brand used on cattle. If you find any such marks, draw them here.

7. How long, wide, and high could the barges used on the canal have been? How do you know? _____

Length _____ Ft. Width _____ Ft. Height _____ Ft.

8. List other things you have found interesting, and tell why they interest you. _____

_____

9. What else would you like to know about the C&O Canal? _____

_____

1. How does the C&O Canal activity involve the learner? The inquiry sheet directs the learner to do a number of things that require him to be actively involved. He must measure and generally explore the area. While he is directed to do some very specific things, he is not restricted from pursuing other avenues that may interest him.

2. What senses are apt to be used in carrying out this activity? The learner must rely heavily on the sense of sight, as many of the questions direct him to look for certain things. But he is also asked to listen (to running water, not to the instructor) and to feel the smoothness of the grooves to provide a clue as to what might have caused them (the tow ropes).

3. How are differences among learners accommodated in carrying out this activity? Although all learners are given the same set of questions, different ways of expressing answers are encouraged. Also, the instructor is available as a resource to assist learners who may be encountering difficulties.

4. How are the previous experiences needed to get the most out of this activity taken into account? While the related experiences that may have preceded this activity are not indicated, learners are allowed to explore before answering the questions given them. Depending on previous experiences, this exploration might be of short or long duration. No time limit is indicated.

5. How is it assured that the activity is one that the learner sees as important for him? This is not obvious from the inquiry sheet, but the latitude provided gives the learner some opportunity to pursue those things of greatest interest to him, as in the last two questions.

6. How are techniques to encourage the learner to discover for himself incorporated into this activity? Very little factual information is given the total group, although some individuals might request additional information. The questions are designed to help learners make discoveries and draw conclusions for themselves.

7. What provisions are included for lessening any anxiety the learner may have about participating in this activity? The lesson is designed so that the instructor is available to answer questions or concerns that may arise as the learner carries out his exploration.

Analyzing the C&O Canal activity in terms of the seven guidelines reveals it as one that provides for much direct learner involvement and therefore as one with a high potential for facilitating learning. Other instructional activities are detailed in Appendix B.

Refreshments

Coffee breaks not only refresh participants by providing a change of pace, but also provide time for sharing experiences and getting better acquainted. Arrangements should be made in advance for service of coffee, tea, and milk in the morning and light refreshments in the afternoon. Usually a residential facility can provide refreshments. If not, make other arrangements to have them available and set up at the site, e.g., using thermal containers provided by members of the steering committee. Try to schedule snack breaks so that they contribute to achieving the overall objectives of the workshop and do not disrupt productive activities. An alternative to the break is to provide refreshments on a continuous basis so that participants can serve themselves at will.

Recording the Sessions

A taped record or typed notes of workshop activities will facilitate post-workshop reporting of the sequence and significance of events. Small cassette recording units are the most practical if the group will be moving from place to place outdoors. Contact the board of education of the participating school system or the management of the workshop facility for loan equipment. If a series of workshops is planned, consider purchasing the equipment.

Where available, videotaping is an excellent means of recording workshop activities. Videotape can provide a permanent record of the workshop for use by other interested groups, or it can be reused to tape significant events at different workshops.

Be selective in tape recording. Tapes are of small value unless transcribed and used. Determine your follow-up needs, and record accordingly.

Difficult Situations

Workshops cannot be designed to meet all needs. Should a participant express concern about the subject matter and its handling, or even about the availability of coffee, avoid defensiveness and respond in a manner that will not increase tension. The following guidelines may be helpful:

1. Make a conscientious effort to understand what is being said—not just the words, but their underlying meaning. For example, when a participant complains about the lack of coffee, the translation might be, "You are not really taking good care of me." Try to understand his point of view.
2. Convince the individual of your sincere effort to understand the problem, by paraphrasing or acknowledging what he has said.
3. Whenever possible, turn the confrontation into a problem-solving situation by giving the participant the rationale behind the decision he is questioning. Involve him in seeking ways to overcome the problem as he sees it.

Evaluation

Accurate feedback is vital to the designing of future workshops. It may be obtained from spontaneous comments and from formal group discussion sessions. If the atmosphere created during the workshop encourages openness and trust, participants will express their opinions without fear.

Forms may also be used for evaluation. Keep them short and easy to fill in. In a one-day workshop, a single evaluation at the end may be sufficient. A sample Overall Workshop Evaluation Form appears on page29; questions should of course be modified according to the workshop design and the evaluation requirements.

In a longer workshop, it may be advisable to distribute several forms at well considered intervals to evaluate sites, activities, or approaches. For example, the Site Exploration Form on page 31 can be filled out by each participant for each site visited. The responses will help educators and managers of the environmental study area to increase its future educational potential by incorporating new facilities or materials or by modifying existing features to facilitate access, use, and interest.

Activity evaluation should focus on both *process* and *content*. Process evaluation refers to method: continuity and flow of activities, relevance and contribution of each to the achievement of workshop objectives, relative emphasis (time) given to each activity. For example, use of a filmstrip to present the concept of environmental strands is a process. To evaluate it ask, "Was the filmstrip an effective means of presenting the strands concept?" The concepts and ideas conveyed in the filmstrip are the content. Content evaluation should measure usefulness of material, strengths and weaknesses, validity of information and concepts presented, and relevance of subject matter to workshop objectives. Evaluating the filmstrip's content would include asking, "Is the strand approach a useful organizing device for learning about the environmental study area?"

Overall Workshop Evaluation Form

Directions: Read each question and circle the number in the column that best represents your answer. NOTE: Feel free to comment in the space provided and on the reverse side.

		Most definitely	Definitely	Satisfactorily	Inadequately	Not at all
1.	Were the objectives of the workshop made clear to you?	5	4	3	2	1
2.	Did you understand what was expected of you at the workshop?	5	4	3	2	1
3.	Was advance information adequate?	5	4	3	2	1
4.	Were meeting facilities adequate?	5	4	3	2	1
5.	Were transportation arrangements satisfactory?	5	4	3	2	1
6.	Were the dining and housing acilities adequate?	5	4	3	2	1
7.	Was registration handled effectively?	5	4	3	2	1
8.	Were helpful environmental education materials made available?	5	4	3	2	1
9.	Were the workshop sessions—					
	a. Relatively free from distraction?	5	4	3	2	1
	b. Held in comfortable surroundings?	5	4	3	2	1
	c. Made meaningful by clear presentations?	5	4	3	2	1
	d. Appropriate in length and number?	5	4	3	2	1
	e. Clear as to goals and purposes?	5	4	3	2	1
	f. Effective in their use of educational techniques and aids?	5	4	3	2	1
10.	Were the consultants and resource persons—					
	a. Effective in their use of educational techniques, aids, etc.?	5	4	3	2	1
	b. Helpful in achieving workshop objectives?	5	4	3	2	1

Cont'd

	Most Definitely	Definitely	Satisfactorily	Inadequately	Not at all
11. Did the staff—					
a. See that the group was well oriented—					
1. Prior to arrival?	5	4	3	2	1
2. After arrival?	5	4	3	2	1
b. Provide adequate assistance during the workshop?	5	4	3	2	1
c. Seem interested in participants' comments?	5	4	3	2	1
12. Was useful information presented at the—					
a. Field sessions?	5	4	3	2	1
b. Evening workshop sessions?	5	4	3	2	1
13. Did you acquire useful information, new viewpoints, or changed attitudes?	5	4	3	2	1
14. Was progress made toward workshop goals?	5	4	3	2	1
15. Have problems or needs emerged that point toward further study or action?	5	4	3	2	1
16. Were stated workshop objectives achieved?	5	4	3	2	1
17. Do you feel you benefited personally from participation in this workshop?	5	4	3	2	1

COMMENTS AND RECOMMENDATIONS

Site Exploration Form

Name _____ Date _____ Weather _____

Directions: Read the form first; then answer the questions that seem pertinent to you.

1. Describe the site explored: _____

_____

2. If you had to name this site, what would you call it? _____

_____

3. Approximate distance and direction from assembly area: _____

4. Approximate time needed to walk from assembly area to site: _____

5. What do you see at this site that lends to its instructional value? _____

_____

_____

6. What would you expect students to do at this site? _____

_____

7. What information do you need to get the most instructional mileage from this site? _____

_____

8. What could be done to the site to make it more usable for instruction? _____

_____

_____

9. What equipment or support materials would be useful in carrying out instructional activities at this site? _____

_____

10. What problems might be encountered at this site? _____

_____

11. What follow-up action would you recommend for this site or for the study area in general?

_____

_____

_____

Evaluation forms may be designed for activities in general (see page 33) or for specific activities (see below). Specific activity evaluations can provide feedback on the degree to which participants understood and were able to use a particular concept and on their needs for additional assistance. The information elicited, if reviewed immediately, may be used to restructure subsequent activities in accordance with these needs.

Summary

Creating a productive learning environment for the workshop requires thorough participant orientation to the facility and activity schedule, satisfactory room assignments for extended workshops, adequate and appropriate meeting areas for the activities, and equipment and materials in good working order. According to post-workshop needs, sessions may be recorded to preserve an accurate record of events. Feedback from participants can be obtained through process-content questionnaires or oral evaluations at different times during the workshop. To enhance the human aspect of the learning experience, workshop staff should be alert for participant dissatisfaction and the opportunity to turn a potentially unpleasant situation into constructive interpersonal communication.

Evaluation of the Use of the Strands Approach

Name of team or individual _____ Date _____ Weather _____

Directions: Complete this form individually or as a team for each site investigated.

1. What effects did looking for strands have on your perception of the environment? _____

2. Did looking for strands help or hinder your awareness of the environment? How? _____

3. Did the strands concept help to unify different elements in the immediate environment? How?

4. What modifications or changes in the area might improve the learning potential of the site in relation to the strands concept? _____

5. What assistance do you need to make more effective use of the strands approach? _____

6. How could you relate the strands approach to your own instructional practices? _____

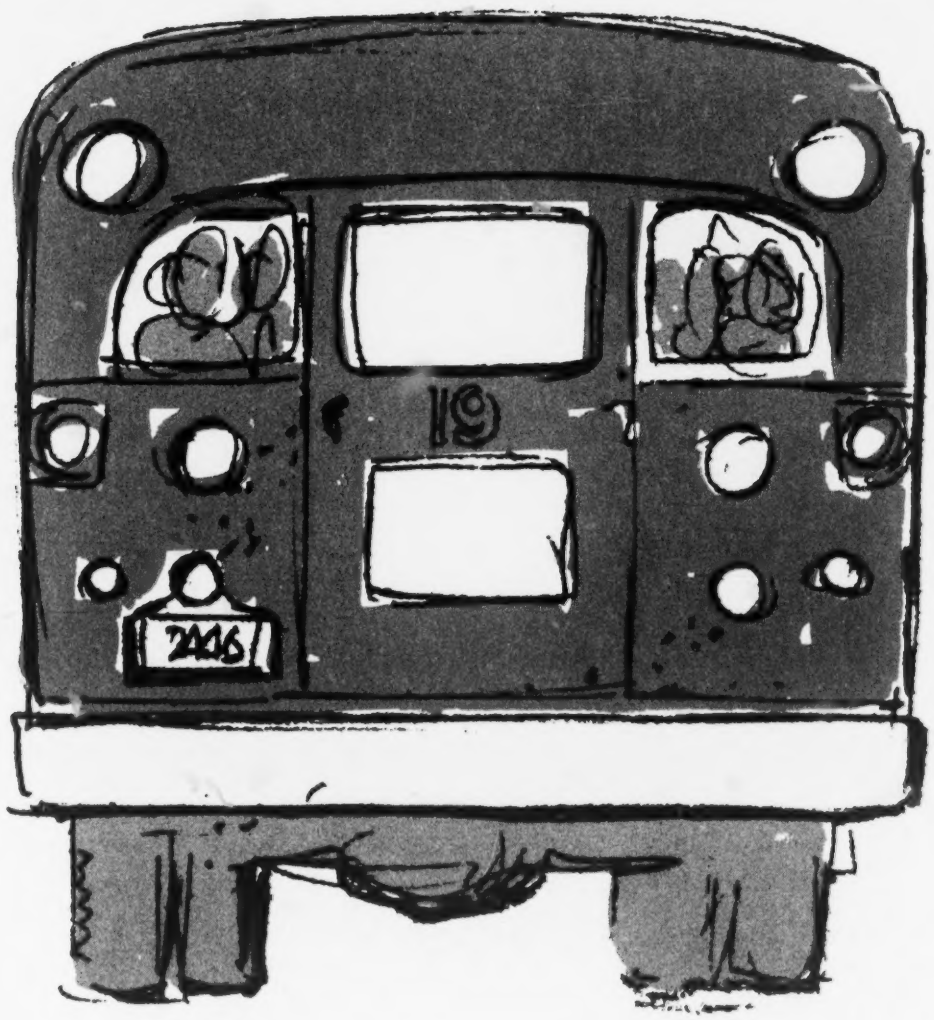
Evaluation of Selected Activities

Directions: Read each question and circle the number in the column that most nearly represents your answer. NOTE: Feel free to comment in the space provided and on the reverse side.

	Most definitely	Definitely	Satisfactorily	Inadequately	Not at all
1. Did the presentation on drawing parallels between the man-made and the natural environments give you ideas about new ways of viewing the environment?	5	4	3	2	1
2. Is this parallel approach an appropriate one to use with students?	5	4	3	2	1
3. Do you feel that carrying out the field activity was a useful exercise?	5	4	3	2	1
4. Did you find the team reports on field activities useful and helpful?	5	4	3	2	1
5. Did the information communication session provide you with new ideas?	5	4	3	2	1
6. Did the "Places for Environmental Education" presentation provide new insights into how facilities can enhance environmental studies?	5	4	3	2	1
7. Did the discussion of possible follow-up actions give you useful ideas?	5	4	3	2	1
8. Are you interested in being involved in follow-up environmental education activities?	5	4	3	2	1

COMMENTS:

CHAPTER VI



WORKSHOP FOLLOW-UP

The workshop itself will have little impact without follow-up action, which should be considered at the outset of the planning process. Consider the workshop the initial step in a far-reaching plan to incorporate the use of environmental study areas into a broader environmental education program which ideally should involve all areas of the curriculum. Just as the exploration of the natural environment can reveal many of the interrelationships that exist there, so too can a well thought-out environmental education program reveal many of the interrelationships of traditional school subjects.

Follow-up action should consist of more than taking a class of students for a one-day field trip to the same environmental study area where the workshop occurs. Ideally it should encompass a comprehensive program plan with broad involvement of students in environmental education. The important thing is to continue to build on the momentum and interest generated by the workshop.

Integrating the use of an environmental study area into the existing curriculum involves coordinating and using people and resources outside the school system. Consequently, establishing a continuing dialogue between key individuals in the school system and in the surrounding community can be an important contribution to the success of a comprehensive environmental education program.

Immediately following the workshop, prepare a report summarizing highlights and recommendations. Copies should be distributed to all workshop participants as well as to key officials in the organizations participating in the workshop. General highlights should also be made available to the media outlets of the participating organizations as well as to the press and interested community groups. Letters should be sent to all participants, resource persons, and others who contributed to the workshop, thanking them and encouraging their continued involvement.

Follow-Up Evaluation

1. Your name (optional):_____

2. Occupation:_____

3. Grade level and/or subject(s) taught *OR* official title:_____

_____

4. Have you used the workshop site subsequent to the workshop? Yes____ No_____

5. Have you used any other environmental study area since the workshop?_____
Yes _____ No _____

6. If you have used the workshop site or other environmental study area(s), indicate the number of times, number of students involved, teachers or others participating, and nature of the activities conducted._____

_____

_____

7. Do you plan to use the workshop site or other environmental study area(s) during the current school year? Yes_____ No _____ If so, please indicate when and for what purpose(s).

_____

_____

8. Have you made any changes in your programs as a result of the workshop experience? Yes _____ No _____ If so, please specify. _____

_____

_____

9. Have you found any of the materials distributed at the workshop helpful in your program? Yes_____ No _____ If so, please specify._____

_____

_____

10. Have you found any of the people with whom you became acquainted at the workshop helpful in your program? Yes_____ No_____ If so, explain briefly. _____

_____

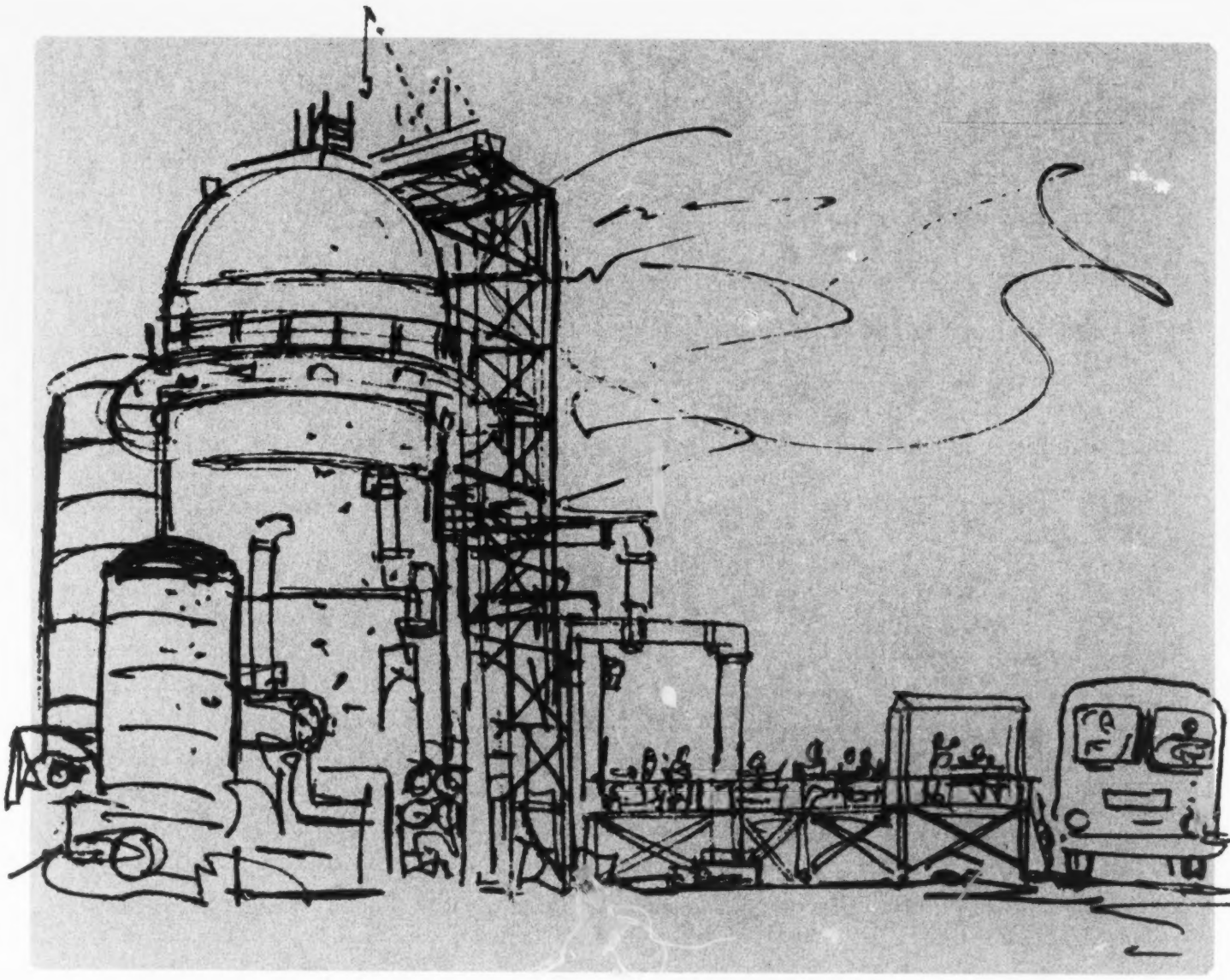
_____

11. Do you need additional support or resources to implement environmental education activities in your program? Yes_____ No_____ If so, please specify_____

_____

_____

USE THIS SPACE TO COMPLETE ANSWERS TO QUESTIONS OR TO MAKE ADDITIONAL COMMENTS.



If post-workshop evaluations are deemed necessary, and if time and resources permit, consider holding an evaluation *conference*. Conferences provide face-to-face interaction and generate a greater commitment to carrying out other follow-up activities. Another alternative is to conduct a follow-up *survey* by mail, two or three months after the workshop, to collect the information needed to improve future workshops, justify financial support, etc. Set a deadline date for returning the questionnaire, and include a self-addressed, stamped envelope.

Follow-up questionnaires may be answered anonymously. They should ask carefully worded questions to avoid ambiguity and lessen the chance of multiple interpretation and confusion. Where possible, phrase questions that can be answered with a simple yes or no, or on a response scale such as "frequently / sometimes / not at all." A sample follow-up questionnaire appears on page35.

Summary

There are a number of follow-up actions that should be considered a logical and vital extension of the workshop. Most important is a plan that incorporates the workshop into a broader environmental education framework. Such a plan may be so broad as to involve the development of committees to write curriculum guides and develop student activities. It may include the designing and staging of subsequent workshops. Or it may simply strive to help workshop participants incorporate environmental study areas into their regular instructional program. In any case, the follow-up plan should be action-oriented, based on sound thinking, and directed toward goals that are meaningful and attainable. Above all, it should be oriented toward providing more creative learning opportunities for students through direct experiences with the environment.

APPENDIX A

START-UP ACTIVITIES

A Start-Up for Strangers

Objective: To allow a group of strangers to meet quickly and overcome initial shyness.

Step 1. Ask participants to look around and find four others they do not know. Instruct each group of five to sit in a circle and get acquainted.

Step 2. Stop the getting-acquainted process after 10 minutes, and ask the participants what they said to each other to get acquainted. They'll usually respond with—

- Name.
- Where I work.
- Where I was born.
- Family information.

After listing several responses on a blackboard or on newsprint large enough for everyone to see, spend a few minutes talking about how easy it is to play a role in getting acquainted—how we avoid exposing ourselves very much, by giving our "name, rank, and serial number" when we first introduce ourselves to strangers. Note that people are usually more interesting than their roles suggest.

Step 3. Again ask each participant to find four others he does not know. This time, however, the groups of five cannot get acquainted by exchanging any of the information already listed, except for their names. This time they must get acquainted by talking about other things. Let them talk 10 minutes.

Step 4. Stop the process and once again ask how people became acquainted. List their responses. Generally they will include—

- Interests.
- Hobbies.
- Values.
- Political philosophies.

Note the differences between the two lists. Ask participants to describe differences between their first and second groups. Typically they will perceive greater involvement, intimacy, and exploration in the second. Ask them to try to set that climate for the workshop by avoiding role playing and by encountering each other on meaningful issues.

A Start-Up for Workshop Goals

Objective: To explore the goals of the workshop in light of participants' expressed needs and interests.

Step 1. Ask each participant to think about what he would like to get out of the workshop. Then allow five minutes for everyone to write his objectives on paper.

Step 2. Ask each participant to find one other person he does not know well and to share expectations with him. Allow five minutes for this.

Step 3. Ask each pair to find another pair with whom to share expectations.

Step 4. Ask each foursome to find another foursome. Hand out a list of workshop goals to each group of eight, and ask if the expectations they have listed can fit within the workshop goals. Allow 15 minutes for group discussion.

Step 5. Ask for general reports from the groups. If there is a high correlation between personal objectives and the objectives the workshop is designed to achieve, no restructuring is necessary. If not, consider what can be done to help. Do not spend too much time at this point on persons or groups with needs impossible for the workshop to satisfy, and do not confuse workshop goals with how you are going to meet them. The important thing is to get people involved in looking at their own needs within the context of the workshop goals.

A Start-Up To Explore Human Resources in the Group (for groups under 40)

Objective: To facilitate a quick sharing of workshop participants' skills and resources.

Many participants bring skills that would be important to share with the group, but they are usually reluctant to come right out and say, "I'm really good at this." This exercise legitimizes a quick sharing of self and allows everyone in the group to influence the exercise.

Step 1. Share with the group this dilemma: it would be desirable if everyone could really get to know everyone else before starting on other workshop activities, but the limited amount of time makes this impossible. As one way of exploring in a short time, ask the participants what kinds of questions they would want to ask to get to know each other better, and list them for everyone to see. Questions that reveal skills and resources should be encour-

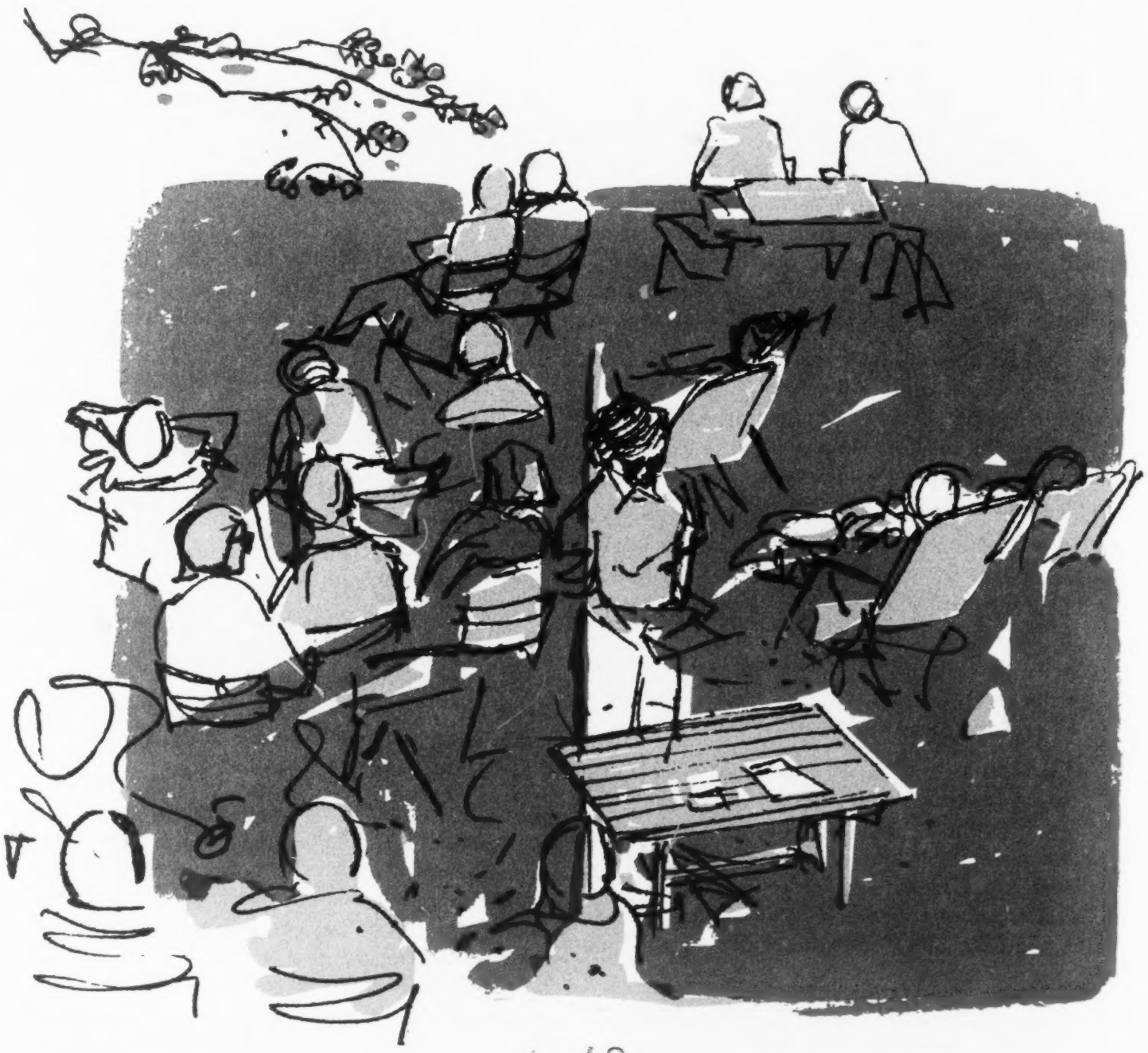
aged. Examples might include—

- If you had one more thing in your life to do, what would it be?
- What hobbies or interests do you have?
- What is the most exciting thing you have done in the last six months?
- What are some skills you could share with other participants?

Step 2. After 10 minutes, collapse the categories as much as possible, putting the questions in some order and numbering them.

Step 3. Give each participant a large sheet of newsprint and a magic marker. Allow 10 to 15 minutes for everyone to write down the numbers of the questions and his answer to each.

Step 4. Hang up the individual sheets with masking tape and have the participants mill around to read and discuss them. Give them an opportunity to ask questions of each other directly or with their magic markers on the newsprint. Where possible, do not remove these sharing sheets, so that they can be read again as participants become better acquainted throughout the workshop.



APPENDIX B

INSTRUCTIONAL ACTIVITIES

Introduction to Strands Concept (No. 1)

Objective: To demonstrate that conceptual strands can serve as an organizing device for unifying different elements of a particular environment.

Step 1. Have individuals make a list of five things of which they are aware or impressions they get in their present location.

Step 2. Walk to a second location and have each person make a similar list of five items. Then have everyone share his 10 items with the total group.

Step 3. Direct each person to group his items into any categories he likes—plants, animals, nonliving things, natural things, man-made things, colors, sensory impressions. (If large numbers of participants are involved, this can be done in teams.) Share the ways in which items were grouped.

Step 4. Ask participants to look for related items in different categories and draw lines between them. Let individuals give examples of related items and explain how they are related.

Step 5. Ask participants to consider how their lists might be different at midnight, at another time of year, 50 years ago, or 50 years in the future. Share these speculations with the total group.

Step 6. After everyone has had an opportunity to participate, relate the strand concept to what has just been done by making observations such as these:

- In grouping items, it is necessary to look for *varieties and similarities.*
- However grouping is done, *patterns* emerge.
- In looking at how things are related, it is necessary to consider *interactions and interdependence.*
- In speculating about how things were in the past or will be in the future, one is really considering *continuity and change.*
- By carrying time extension even further, *adaptation and evolution* can be considered.

When these points are made, the activity may be terminated, or there may be additional discussion on how the strand approach can be used to tie together different elements in the environment.

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Introduction to Strands Concept (No. 2)

Objective: To demonstrate that conceptual strands can serve as an organizing device for unifying different elements in a particular environment.

Step 1. Direct participants to list as many different things as they can identify or describe at the site in five minutes.

Step 2. Have them list the groups into which the different things could be placed. (Groups can be as specific as "trees" or as broad as "living things.")

Step 3. Ask each participant to indicate which of his individual items are dependent upon or react directly with something else on his list.

Step 4. Have participants indicate which items on their lists have probably changed most in the past 10 years and which have probably changed least.

Step 5. Elicit individuals' ideas about how the living things at the site have adapted to the physical conditions there.

Step 6. Relate the discussion generated by these questions to the strands. Explain that the strands are the constants that run through the total environment. Since they can be identified in all situations, they can be used to help give unity to the total environment. This exercise can be repeated at a totally different site to reinforce this point.

Application of Strand Approach

Objective: To provide practice in applying the conceptual strands in different sites.

Step 1. Explain that the conceptual strands provide a way of viewing different aspects of the environment and help to reveal how everything in the environment is interrelated. Go through the strands, and have participants identify examples of each strand in the immediate environment.

Step 2. Assign one or two strands to individuals or teams and direct them to find a site where they will look for evidence of a particular strand and list their findings. Allow about 30 minutes for this activity.

Step 3. Reassemble the group, and let individuals or team recorders present what was listed and relate each observation to a particular strand.

Step 4. This exercise can be concluded by having participants fill out the evaluation form on the use of the strands concept (see page 32) or by sending them to another site to look for evidence of other strands.

APPENDIX C

MODEL WORKSHOP DESIGNS

The following model designs for a one-day and a two-day environmental study area workshop are presented as hypothetical examples. They are not intended as a shortcut for the workshop design process. Each of the designs is based on a general goal from which specific objectives have been developed; activities in the models are structured to achieve these objectives.

1-Day Workshop Design

General Goal

To create an awareness of the environmental study area through use of all five senses.

Specific Objectives

1. To introduce participants to the environmental study area and to familiarize them with its resources
2. To develop in participants an awareness of the environmental study area through direct sensory experiences
3. To share individual experiences for the benefit of others in the group
4. To critique and evaluate the sensory approach process and explore its possible applications.

Time	*Activity*	*Explanation*
8:30-9:00 a.m.	Registration	A table should be set up for distributing name tags and materials to participants upon arrival. If no permanent facility is available, a tent shelter may be set up.
9:00-9:15	Welcome Introductions Orientation	Introductions, overview of workshop purpose, explanation of objectives and expected outcomes should be given by workshop director. An official representing the ESA should make welcoming remarks. Let each participant introduce himself if time permits.
9:15-9:45	Start-up activities and team-building	Have participants gather in groups of four for start-up activities. Afterwards, ask each participant to select a partner for the day's activities. Explain that two-member teams will be the group structure for sensory experiences. Allow 10 minutes for the two people in each team to get better acquainted.
9:45-10:00	Coffee break	Arrange to have coffee and tea at the site (pastries optional). Allow this activity to be an extension of the team-building exercise.

Cont'd

Time	*Activity*	*Explanation*
10:00-10:30	Introduction to sensory exploration exercise	Explain the purpose of the sensory exploration exercise (elaborate from workshop objectives and other resource materials). The first sensory exercise should focus on taste, smell, and texture. Instruct pairs to explore the ESA and "collect" and record as many tastes, smells, and textures as possible. One team member should record all sensory observations for discussion later. Upon return, pairs will arrange displays of their collections to share with the other participants. Entertain questions.
10:30-12:00	Sensory exploration of the ESA	Allow each pair to explore the ESA on their own. Do not restrict or constrain the activity. Some participants will get more involved than others. Instruct pairs to allow sufficient time to arrange their displays for sharing with other teams.
12:00-12:45 p.m.	Lunch	Participants should have been instructed in advance to bring bag lunches. If lunch is the workshop director's responsibility, provide box lunches or a smorgasbord.
12:45-1:15	Discussion of morning session	Although participants probably will be sharing reactions informally by now, time is provided here for feedback from the total group. This should be limited to general observations and comments, since group sharing and critique will come later. Use the discussion as a lead into the secondary sensory exploration experience, explaining that this activity will focus on sight, sound, and touch.
1:15-2:45	Second sensory exploration of the ESA	Each pair will take a "blind" walk through the ESA, with one partner blindfolded and the other serving as a guide. Roles should be switched midway through the exercise. Suggested hike routes might also be given. During this activity, participants should become familiar with a wide variety of sights and sounds in the ESA.
2:45-3:00	Refreshments	Choice of beverages will depend on the weather, but a limited variety should be available, e.g., coffee and soft drinks.
3:00-3:45	Group sharing of experiences	Provide an opportunity for teams to view one another's displays and share their experiences in informal group or individual discussion.
3:45-4:15	Critique and evaluation	Provide for an open and frank discussion of the day's activities. Evaluation might include oral feedback, a written critique by each participant, and a written evaluation form. Take careful notes or record the entire oral evaluation session for use in developing future workshops and in providing participants with a synopsis of the workshop. Allow time for teams to return objects "collected."
4:15	Adjournment	Thank steering committee and others who assisted, as well as participants.

2-Day Workshop Design

General Goal

To introduce participants to the ESA and acquaint them with approaches to its use.

Specific Objectives

1. To introduce participants to the environmental study area and to familiarize them with its resources
2. To acquaint participants with the strand approach
3. To acquaint participants with the man-made/natural environment parallel approach
4. To involve participants in working directly to apply these approaches
5. To critique and evaluate the approaches and recommend ways to use them with students.

Time	*Activity*	*Explanation*
First evening		
4:00-5:30 p.m.	Registration Room assignment	Set up registration table in readily accessible area of resident facility. Place a sign near the entrance to guide participants to the table. Room assignments should be made in advance. Participants should be given name tags (prepared in advance), a workshop schedule, directions for room check-in, and location and time of first session.
5:30-6:00	Welcome Orientation Introductions	Welcoming remarks, overview of workshop purpose, explanation of specific objectives and expected workshop outcomes should be given by the workshop director. Participants should introduce themselves if time permits.
6:00-7:30	Dinner	The dinner menu should be selected in advance and served banquet style. Small tables seating six to eight are ideal. All details should be worked out with facility staff well in advance.
7:30-8:30	Start-up activities Team-building exercises	Room environment and arrangement should be informal, but carpeting on the floor is desirable. Dress should be casual. Ask participants what information they would like to know about the others in the group. Ask participants to team up with three other people they would like to work with during the workshop. Allow 10-15 minutes for teams to get acquainted.
8:30-9:00	Media presentation	Show filmstrip "Man and His Environment: A New Approach to Environmental Education." Distribute environmental education materials.
First day 7:30-9:00 a.m.	Breakfast	Allow participants to have breakfast on their own or in groups of their choosing.
9:00-9:15	Travel to ESA	If the housing facility is located on the ESA site, no travel time need be scheduled. If travel is involved, the time required should be determined in advance.
9:15-10:30	Orientation to the ESA	Someone thoroughly familiar with the ESA should take the group on a tour of the area, pointing out noteworthy features, explaining historical and cultural significance, and indicating primary uses. A map of the ESA and any available printed material will be helpful.

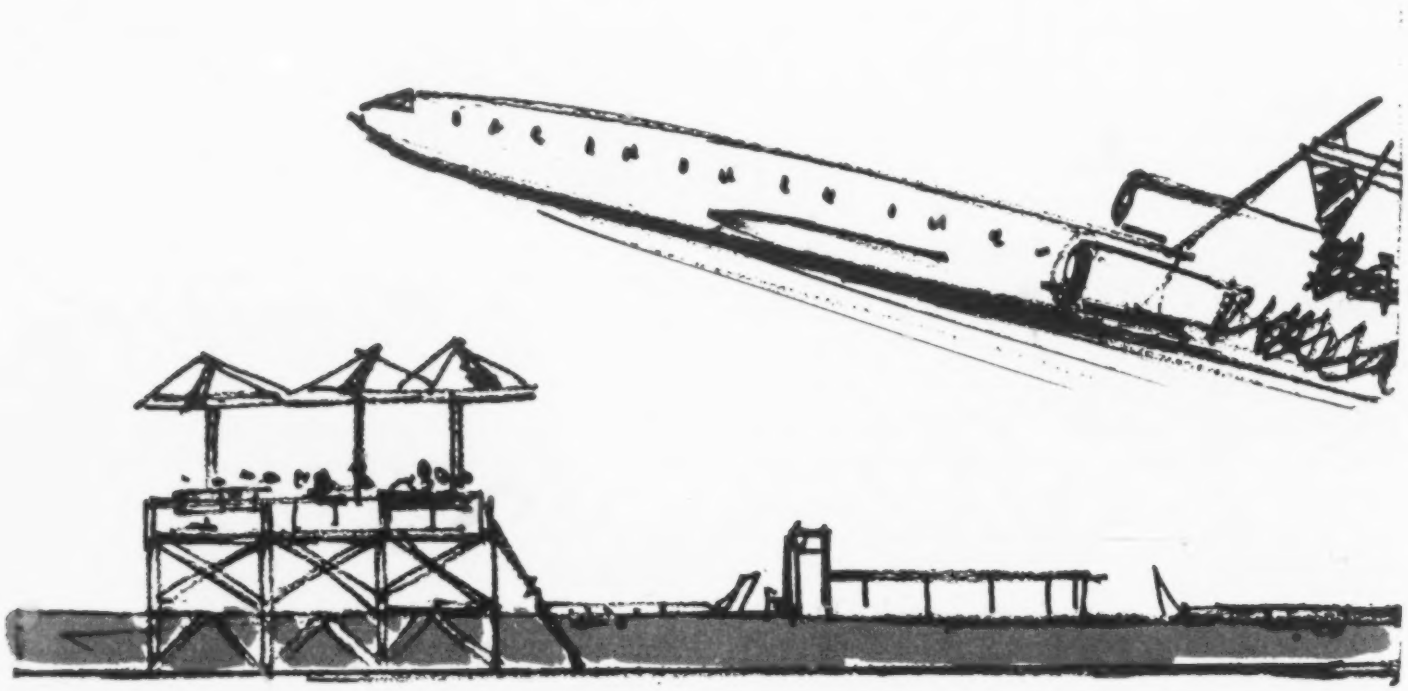
Cont'd

Time	*Activity*	*Explanation*
10:30-10:45	Break	Arrange to have coffee and tea at the site. If weather is warm, cold drinks might be provided.
10:45-12:00	Introduction to the strand approach	Introduce the group to the strand approach explained in *Man and His Environment: An Introduction to Using Environmental Study Areas* (NEA, 1970) and in several documents produced by the National Park Service. These materials should be obtained in advance and serve as basic resource material for the workshop.
12:00-1:00 p.m.	Lunch	Bag or box lunches should be provided at the site.
1:00-2:30	Strand approach exercise	Each team should be assigned a particular location within the ESA and asked to relate that location to the five strands. There are several variations to this exercise, and teams should be allowed to develop their own if they wish. The publications mentioned above contain information on this activity.
2:30-4:30	Team reports and discussion	Bring teams together in a central location. Ask each team to spend half an hour critiquing and writing up the strand approach exercise. Provide refreshments during this time. Forms may be prepared in advance to guide this exercise and provide uniformity in reporting. Ask each team to select a reporter, and allow 5 to 10 minutes for each report. Discussion may follow each report or may conclude the session. This session should be recorded.
4:30-6:00	Free Time	Return to housing facility. Allow free time to relax and prepare for dinner. No formal activities during this time.
6:00-7:30	Dinner	Follow same procedures for dinner as on previous evening.
Second evening		
7:30-9:00 p.m.	Introduction to the natural/man-made parallel approach	Assemble group in meeting room and explain the concept of drawing parallels between the natural and man-made environments. (For additional information see materials developed by the Group for Environmental Education.) Discuss the concept of making environments "observable." Introduce the various systems that serve as the basis for drawing parallels: patterns of use, movement, life support systems, cycles, population, levels (at, above, or below ground level). Give examples of natural/man-made parallels for each category. Assign one category to each team. Direct teams to plan for activity development exercise to be conducted the next day.
Second day		
7:30-9:00 a.m.	Breakfast	Same procedure as on previous morning.

Cont'd

Time	*Activity*	*Explanation*
9:00-12:00	Development of parallel activities	Assemble group and travel to ESA. Conduct final briefing for activity development exercise planned the previous evening. Instruct each team to develop a specific activity that can be done by student groups in an hour at the site. Each activity should be based on the team's assigned category and should show parallel relationships between the man-made and natural environments. Teams should be free to work on their own during the morning. Do not plan a formal coffee break, but make coffee available in a central location for teams to have when they choose.
12:00-1:00 p.m.	Lunch	Handle same as on previous day if afternoon session is to be conducted at the site, or return to housing facility for lunch and conduct afternoon session there. Choice will depend on logistical requirements of participants, room check-out time, and general convenience.
1:00-2:30	Team reports and discussion	Assemble group. Allow teams 30 minutes for final preparation of reports on parallel activities exercise. Allow 5 to 10 minutes for each team report. Discussion may follow each report or be held until all reports have been given. Reports and discussion should be recorded.
2:30-3:30	Critique and evaluation	Allow time for a detailed critique and evaluation of the total workshop—both written and oral. Forms should be prepared in advance for the written evaluation. Allow ample time for open discussion, and encourage frank comments. Evaluation should address both process and content elements of the workshop. Conclude exercise with short brainstorming session on possible follow-up action or recommendations for "where to go from here." Get commitments if possible.
3:30	Adjournment	Thank participants and resource persons. Make whatever final announcements are needed.

APPENDIX D



NESA WORKSHOP SCENARIO

What follows is an illustration of how an environmental study area workshop might develop. It is intended to give persons unfamiliar with staging workshops a quick view of the total process. It is not intended as a model nor does it purport to cover all contingencies for any given workshop.

For the past year and a half, the teachers and students in Pseudoville School District have been working together to develop an environmental studies program. The program, involving the district's intermediate grade students, is based on an interdisciplinary approach. The teachers have organized a committee to revise the curriculum to integrate environmental education into subjects taught in the intermediate grades: social studies, math, science, communications, and art.

The committee has decided to base the environmental education program on the strand approach. It has adopted the booklet *Man and His Environment: An Introduction to Using Environmental Study Areas* as its guide to planning a program that combines classroom study and direct experience in study areas outside the school.

The committee has had little trouble planning the classroom component of the program. However, difficulties have arisen in planning the outside environmental study phase. With the exception of a few field trips, the Pseudoville teachers have never conducted programs outside the school. They are not familiar with the learning potential of the surrounding community, they do not know what resources are available to them, and they are uncertain about how to use these resources as part of their program.

The committee has learned that several other school systems have developed environmental education programs using facilities of the national park located 30 miles away. A decision is made to contact the park to seek help. The committee chairman drafts a letter to the park superintendent explaining the program and asking about possible assistance.

The following week, the committee receives a letter from the environmental education specialist on the Park Service staff. He explains that the park contains a designated National Environmental

Study Area (NESA) and that he and other National Park Service (NPS) personnel are available to help develop and conduct a program. He suggests that the committee meet with him and encloses literature describing the NESA program.

The committee is enthusiastic, and a meeting is arranged. At the meeting, the environmental education specialist explains the NESA program in detail, indicating that the school district is welcome to use the human and natural resources of the park. After further discussion the committee decides that the best way to acquaint teachers with the NESA and to familiarize them with the strand approach is to conduct a workshop at the environmental study area. It decides to form a steering committee to plan the workshop. The group discusses the functions of the steering committee and decides that it should be small enough to operate effectively while still being representative of the levels and departments in the school and park systems. The decision is made to ask six people to serve on the steering committee. Representing the school system will be the president of the local teachers association or his designee, the curriculum development specialist, a social studies teacher (chairman of the original committee), and the assistant superintendent in charge of instruction; representing the NPS will be the environmental education specialist and an interpretive naturalist. The social studies teacher, selected as committee chairman, agrees to draft a preliminary agenda and to call a meeting of the committee within the next two weeks.

The initial meeting of the steering committee is to be held at the park. The chairman phones committee members to clear a meeting date and follows up with a letter to each, giving the time and location of the meeting. The letter also lists the major agenda items: developing the workshop design, selecting workshop participants, and determining the workshop site.

The park interpreter begins the steering committee meeting by leading the group on a tour of the area, pointing out significant features of the site and paying particular attention to the designated NESA. It is decided that the NESA site will be used for conducting workshop activities.

Committee members discuss the workshop design and suggest that it be based on the philosophy and goals of the NESA program. The environmental education specialist points out that the NESA philosophy is based on the five environmental strands: variety and similarity, patterns, interaction and interdependence, continuity and change, and adaptation and evolution. He notes that the strands can serve as an organizing device to make the interrelatedness of elements in the total environment (including man) more understandable to the individual student. He concludes by stating that the goal of the NESA program is to develop environmental literacy leading to a personal environmental ethic based on an understanding of the earth's life support systems and how they work.

After agreeing that the overall goals for the workshop should be to inform teachers about the NESA philosophy and to familiarize them with the NESA site and its instructional potential, the committee proceeds to develop specific workshop objectives related to these goals: (a) to acquaint participants with the NESA and its resources, (b) to explain the strand approach and demonstrate its usefulness, and (c) to involve participants in using the strands in exploring a site.

The selection of participants is the final item on the agenda. It is agreed that they should be representative of various subject areas and grade levels and should be committed to following through after the workshop. It is felt that at least one person representing the school district administration should be involved. All members of the steering committee agree to be involved, either in staff roles or as participants.

The committee members volunteer for individual assignments to carry out before the next meeting: arranging for food and transportation, gathering materials, handling publicity, identifying potential resource persons, arranging for advance information for participants, and coordinating participant selection.

The steering committee decides to hold another meeting within two weeks, this time at the school district office. Committee members agree to be prepared to report on assignments and to complete pre-workshop planning at that time. The committee chairman will coordinate assignments and answer questions. She agrees to prepare a written report of the first meeting and an agenda for the second meeting and to mail them to committee members within the week.

The second steering committee meeting begins with individual assignment reports. It is reported that 18 teachers have responded to the workshop notice, indicating an interest in participating. Upon reviewing the list, the committee decides to issue invitations to all 18.

The workshop design is taken up next. Because of limited resources, the committee decides on a one-day workshop. Possible dates are discussed. It is reported that released time has been authorized

for teacher participation, and the workshop is set for a Thursday.

The committee brainstorms to develop possible activities for achieving the workshop's objectives. Among the ideas suggested are the following:

1. A lecture on the NESA philosophy
2. Exploration of the NESA site
3. Identification of plants and animals at the site
4. Identification of rocks and minerals at the site
5. Explanation of man's influence on the area
6. Explanation of the strand approach
7. Demonstration on the use of the strands
8. Individual application of the strand approach
9. Discussion of how use of the area and the strands could be integrated into each teacher's regular program.

Becoming realistic and critical, the committee discards the first idea because of the low level of participant involvement it provides and because a more subtle approach is thought to be more effective. It decides that the NESA philosophy can be revealed in the selection of activities and the way they are conducted. The second suggestion is incorporated as part of ideas 6 and 7, and it is decided that an indirect introduction to the strands will be most effective. The group decides that while activities 3 and 4 would acquaint participants with some of the resources of the area, they are not crucial to achieving the overall goals of the workshop and cannot be included in the amount of time available. However, some things inherent in these suggestions will be brought out as the NESA is explored under the guidance of persons conducting other activities at the workshop. Number 5 is thought to be so important that it deserves a more involving activity than an "explanation" and will be emphasized during the introduction to the strands. Number 8 is considered essential if participants are to make subsequent use of the strand approach with their students. The committee feels that suggestion number 9 is very important but should be the responsibility of individual participants and the possible theme of a follow-up workshop or seminar.

After making these decisions, the committee agrees to include a half hour for helping participants get acquainted. Then it sequences all the activities and develops a tentative workshop schedule.

Workshop assignments are discussed. One committee member is selected to serve as workshop director. Another agrees to conduct the start-up activities. The Park Service environmental education specialist agrees to conduct the introduction to the strand approach. Other committee members are assigned specific responsibilities for preparing and mailing advance materials, conducting registration and preparing name tags, handling supplies and equipment, ordering and collecting support materials, providing refreshments and lunch, and recording.

One week prior to the workshop the final advance mailing of materials is made. The mailing includes a tentative workshop agenda and an information sheet spelling out the time and place of the workshop, travel arrangements, and other pertinent details.

Workshop participants gather at the specified school at 8 a.m. on the day of the workshop. Arrangements have been made with several participants to use their private automobiles for transportation to the workshop site. The group leaves the school at 8:15 for the 45-minute drive to the site.

Since no meeting facilities large enough to accommodate the group exist at the site, an outside meeting area has been set up. Five picnic tables are arranged in a horseshoe shape under a tent-like shelter open on the sides. Name tags and packets of materials are set out on one of the tables.

Upon arriving at the site at 9 a.m., each participant is provided a name tag and packet of materials containing a workshop schedule, list of partici-

pants, list of goals and objectives, map of the area, and booklets describing the park and the NESA program.

The workshop officially gets under way at 9:10. The committee chairman introduces the park superintendent, who extends a welcome to the group on behalf of the National Park Service. Then the workshop staff are introduced. In the discussion of the day's activities that follows, they point out that the primary purposes of the workshop are to familiarize participants with the environmental study area and its instructional potential and to introduce them to the NESA philosophy and the strand approach.

The discussion lasts until 9:30. The next half hour is devoted to activities designed to help participants get better acquainted with one another and to develop teams. Arrangements have been made to provide coffee and doughnuts about 10 a.m. The coffee break gives participants an additional opportunity to get better acquainted with their team members.

The introduction to the strand approach, consisting of six specific steps, lasts from 10:15 until noon. The objective of this activity is to demonstrate how the strands can serve as an organizing device for unifying different elements of the environmental study area. As the group explores the area, evidence of man's influence there is also emphasized.

Shortly after noon, the group breaks for lunch, which each participant has brought along. Beverages are provided by the steering committee.

At 1 p.m. there is a short review and discussion of the morning's activities. The objective of the afternoon session is to provide practice in applying the strands approach at various sites within the NESA. Following orientation, each team is assigned one of the five strands and is given 45 minutes to find a site where there is evidence of that strand and to record its findings.

At 2:15 the teams regroup at the shelter area. Each team is then given 30 minutes to prepare a report of its activity. Coffee and cold drinks are provided for teams to have on their own while they work on their reports. Each team is then asked to present a five-minute report to the group, with no discussion between reports. The reports end at 3:15, and a half hour of open discussion follows.

The day's program concludes with an evaluation of specific workshop activities as well as a general evaluation of the workshop itself. Written evaluation forms, prepared in advance, are filled out by each participant.

At 4:15 the steering committee chairman thanks the group for participating in the workshop. She announces that a report will be prepared within two weeks and will be mailed to all participants, and that the steering committee will meet the following week to evaluate the workshop and recommend follow-up action. The workshop adjourns at 4:30 p.m.

The following week the steering committee holds a meeting to review the participants' evaluations. Generally the comments are favorable and indicate that the participants' understanding of environmental study activities was greatly expanded by the workshop. Many participants express the need to integrate the strands concept and the use of environmental study areas into the regular classroom program. The committee members agree to continue as a functioning unit to develop guidelines to assist teachers in meeting this need.

During the next three months the steering committee will gather resource materials and other information and key them to the regular classroom units so that students will become familiar with the interdisciplinary nature of the strands and of environmental education. Wherever possible, committee members and the teachers who participated in the workshop will also provide direction in developing new curriculum materials geared specifically to the needs of the school system.

SELECTED REFERENCES

The following materials may be useful in conducting environmental study area workshops. Most contain specific activities or exercises for studying the environment, both natural and man-made.

American Camping Association (Bradford Woods, Martinsville, Indiana 46151). *Acclimatization: A Sensory and Conceptual Approach to Ecological Involvement.* A detailed guide to initiating a sensory approach to environmental investigation. 1972. 138 pp. $3.25.

American Education Publications (Education Center, Columbus, Ohio 43216). *Ecology Books.* 32- and 48-page booklets for secondary students present factual information and self-directed instructional activities. Brochure available.

American Geological Institute (2201 M Street, N.W., Washington, D.C. 20037). *Environmental Studies.* Packets of interdisciplinary materials. Innovative lessons emphasize artistic, social, mathematical, and scientific aspects of the environment. 1971. $5 per packet (approximately 30 cards).

American Association for Health, Physical Education, and Recreation (1201 16th Street, N.W., Washington, D.C. 20036). *Man and His Environment: An Introduction to Using Environmental Study Areas.* Presents an interdisciplinary approach to environmental education for teachers through the use of five conceptual strands. Filmstrip also available. 1970. 56 pp. $1.75 per copy; quantity rates available.

Burgess Publishing Company (426 South Sixth Street, Minneapolis, Minnesota 55415). *Field Study Manual for Outdoor Learning.* Compilation of outdoor exercises, many of which are easily adapted to the regular curriculum. 1968. 122 pp.

Educational Facilities Laboratories, Inc. (477 Madison Avenue, New York, New York 10022). *Environmental Education: Facility Resources.* Presents an overview of places and things in the national parks, schools, and communities and suggests ways to use them to build effective programs in environmental education. Cites specific examples in urban and natural environments. Prepared for the National Education Association's Environmental Education Project (administered by the Association of Classroom Teachers and funded by the National Park Service). In press. About 64 pp. $2.

Government Printing Office (Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402). *NESA: A Guide* (revised edition). Basic guide for the National Environmental Study Area program, including the interdisciplinary technique and philosophy for setting up and using NESA's, as well as material on the meaning and application of the five environmental strands. Prepared by the National Park Service, U.S. Department of the Interior. Stock No. 0-389-991. In press. Approximately 64 pp. Approximately $2. *All Around You.* Contains classroom and outdoor activities relating to the urban and the natural environment for upper elementary and junior high students. Includes teacher's guide. Developed by the Bureau of Land Management, U.S. Department of the Interior. Stock No. 2411-0035. 1971. 126 pp. $1.50.

Group for Environmental Education (GEE!, 1214 Arch Street, Philadelphia, Pennsylvania 19107). *Our Man-Made Environment, Book 7.* Contains 17 problem-solving exercises designed to make the man-made environment more meaningful to seventh graders. *Learning To Get Around.* Contains 16 lessons to help students visualize their surroundings and create and interpret maps for their own purposes. Brochure of GEE! publications available.

Interstate Printers & Publishers, Inc. (19-27 North Jackson Street, Danville, Illinois 61832). *Tips and Tricks in Outdoor Education.* Contains detailed descriptions of activities that can be conducted outdoors relating to most in-school subjects. 1970. 184 pp.

National Audubon Society (950 Third Avenue, New York, New York 10022). *A Place To Live.* Teacher edition plus workbook for upper elementary students. Contains exercises to make students aware of the natural environment in

the urban environment. Workbook, 75 cents; teacher's guide, $1.50.

National Wildlife Federation (1412 16th Street, N.W., Washington, D.C. 20036). *Environmental Discovery Units.* Inquiry-oriented activities for teaching ecology, K-12. $1 or $1.50 per unit. Brochure available.

Scholastic Book Services (904 Sylvan Avenue, Englewood Cliffs, New Jersey 07632). *Earth Corps Study Program.* Consists of several activity-oriented kits for elementary grades to develop environmental awareness and teach the effects of man's actions on the interdependency of living things. Each kit serves 23 pupils and 1 teacher—$24 per kit. (Additional student activity books at 75 cents each sold only with kit.)

Silver Burdett Company (250 St. James Street, Morristown, New Jersey 07960). *Adventure in Environment.* Classroom Book, Outdoor Book, and Teacher's Guide available for upper elementary grades; projected to include K-12. Designed to familiarize children with ecological processes by relating them to the regular curriculum. Developed by the National Park Service, U.S. Department of the Interior. *NEED Picture Packet and Teacher Guide.* Full-color environmental photos on twelve 18 1/2" x 23" cardboard cards to stimulate discussion in elementary through high school grades.

Checklist for Planning and Conducting an Environmental Study Area Workshop

Tasks prior to the workshop

_____ Decide to conduct an environmental study area workshop
_____ Initiate contact with either school system or resource area/agency
_____ Form steering committee
_____ Develop workshop design
  _____ Agree on goals
  _____ Determine objectives in light of goals
  _____ Brainstorm (generate) activities to achieve objectives
  _____ Identify limiting factors
  _____ Select activities
  _____ Sequence activities
  _____ Identify necessary support systems for activities
  _____ Outline general schedule
_____ Select participants
_____ Select workshop site
_____ Arrange for housing (if necessary), meals, transportation
_____ Contact resource persons
_____ Gather materials
_____ Handle publicity
_____ Develop specific schedule
_____ Develop information sheets
_____ Mail advance materials to participants

Tasks during the workshop

_____ Register participants
_____ Assign rooms (if necessary)
_____ Check meeting places
_____ Provide on-the-spot support
_____ Provide refreshments
_____ Conduct start-up activities
_____ Conduct instructional activities
_____ Record the sessions
_____ Evaluate activities
_____ Handle difficult situations

Tasks following the workshop

_____ Send thank you letters to those providing assistance
_____ Encourage continued use of the workshop site
_____ Prepare summary report of workshop
_____ Conduct follow-up evaluation
_____ Other